OKIDATA

OKIMATE 20

Printer Handbook

for Commodore® Computers

OKIMATE 20 ®
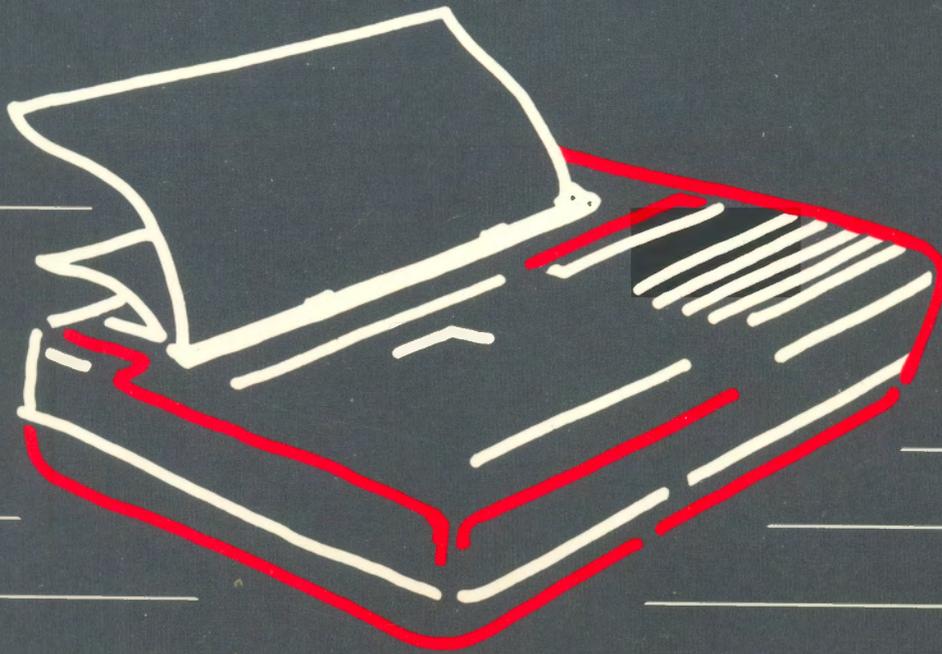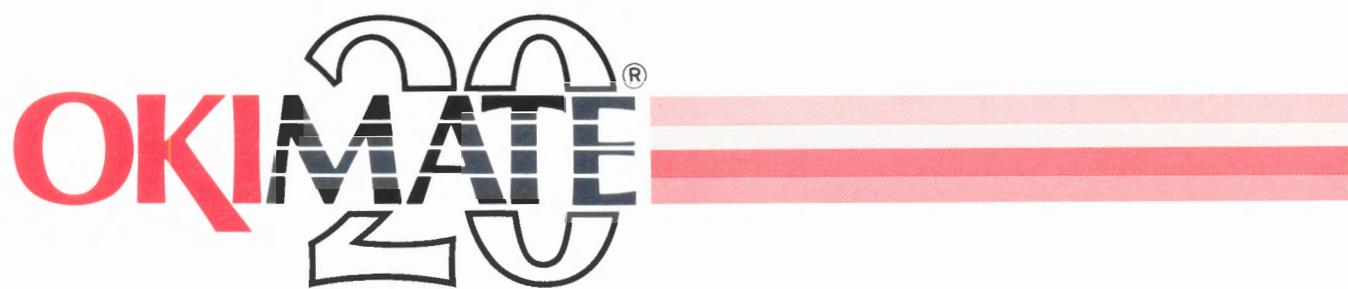
THE PERSONAL COLOR PRINTER

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Section 1: Meet Your OKIMATE

Your OKIMATE printer can print almost anything you create on your Commodore computer screen: letters, reports, charts, and graphic designs (in black or in color). It can underline phrases, print them in italics, or write them in eye-catching headlines. With its superscripts and subscripts, OKIMATE can print footnotes, exponents for math problems, and chemical formulas.

This printer handbook explains all you need to know about setting up and printing with OKIMATE. Just read through these first few pages, and OKIMATE will soon print its self-test pattern, and demonstrate its printing style for you.

1
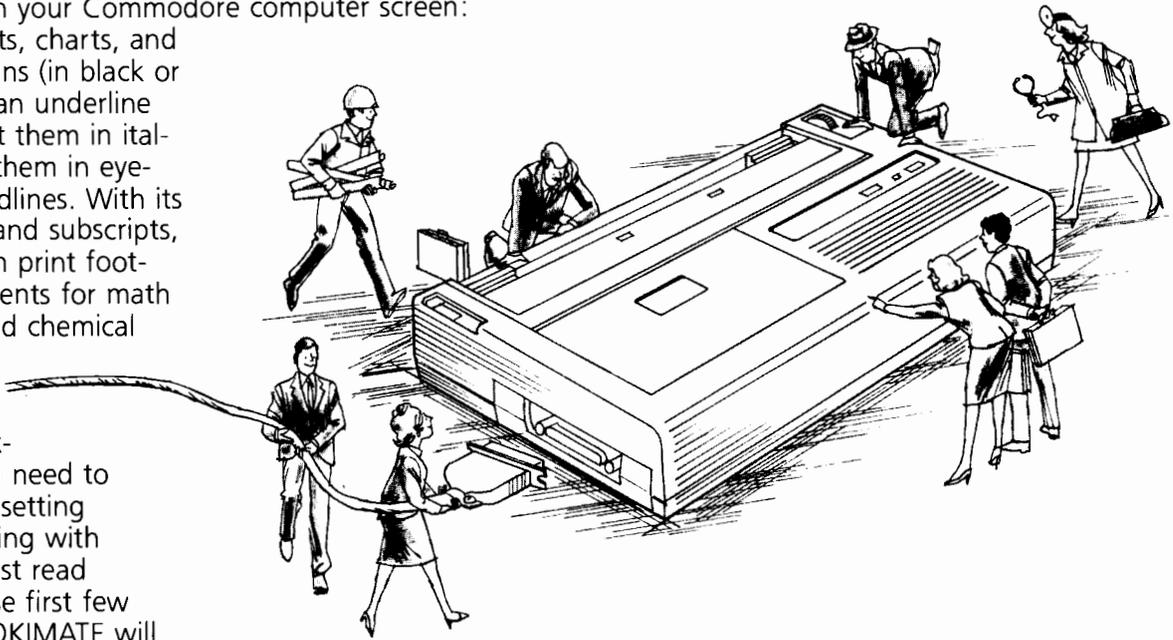
What You Get

Your OKIMATE and its accessories come in two separate boxes. Be sure you have all of these items:

In the printer box:

- ☐ An OKIMATE printer

In the Plug 'n Print box:

- ☐ Plug 'n Print control module
- ☐ Control module locking cover
- ☐ Data cable
- ☐ Black ribbon (in clear bag)
- ☐ Color ribbon (in color bag)
- ☐ Computer paper
- ☐ OKIMATE Color Screen Print disk
- ☑ This printer handbook

If any of these items are missing or damaged, please return the complete package, along with your sales receipt, to the store where you purchased your OKIMATE printer.

Getting Started

Before you begin setting up your OKIMATE, take a quick look at the printer so you can become familiar with the components and printer controls shown here. We'll explain each of them in more detail later on.

Paper advance knob

Paper guide

Paper door

ON/OFF switch

Paper window

Paper guide

OKIMATE

Paper lever

Control panel

Control module

Ribbon door

Locking cover
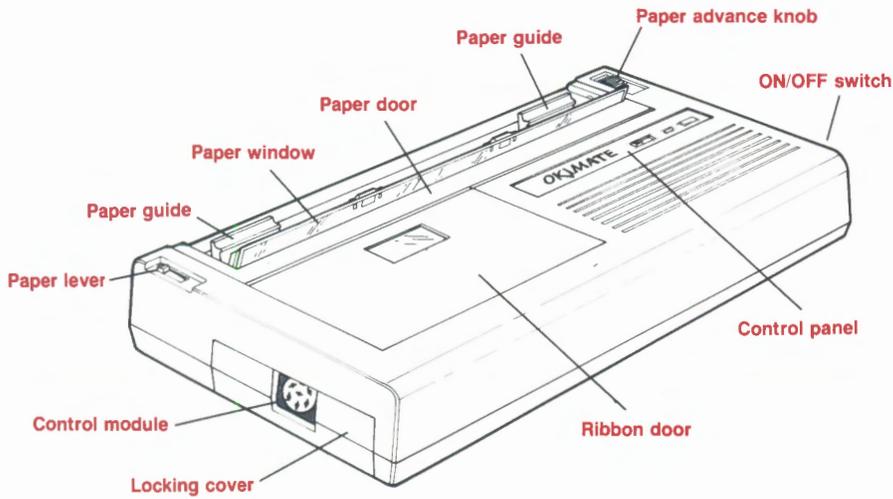
The CONTROL PANEL buttons let you activate the printer and control print darkness. The READY light tells you the printer is ready to print, and signals you if there's a printing problem, such as running out of ribbon or paper.

The PAPER DOOR and PAPER WINDOW open to allow you to insert paper and reach the printhead. Open the RIBBON DOOR to change the ribbon.

You can manually advance paper with the PAPER ADVANCE KNOB.

The PAPER LEVER disengages the friction-feed mechanism so you can insert paper easily.

The CONTROL MODULE serves as the interface between your computer and OKIMATE. This fits into the MODULE SLOT, and is covered by the LOCKING COVER. The locking cover also serves as a tool for removing the control module.

The PAPER GUIDES adjust to accommodate different sizes and types of paper. The left guide allows you to set your margin when using computer paper.

The ON/OFF SWITCH turns on the power to the printer and sets the location of the top of form.

3

Setting Up

Now you're ready to set up OKIMATE, and get a quick printing demonstration by running its self test.

Don't plug in your printer or attach it to your computer yet. We'll tell you when you can.

Follow these steps to insert the Plug 'n Print module:
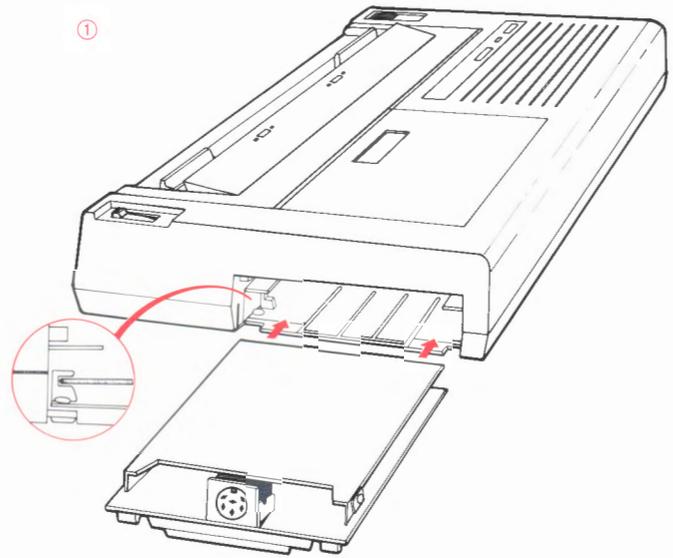
SLIDE THE CONTROL MODULE INTO THE SLOT GROOVES. IT SHOULD FIT TIGHTLY.

4

②
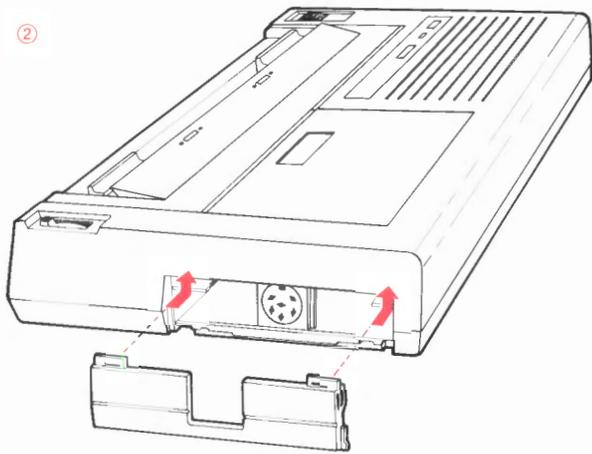
IMPORTANT: Always turn off and unplug your OKIMATE before inserting or removing the control module. See page A-2 for directions for removing the control module.

Inserting Computer Paper

THESE BLACK ROLLERS MUST BE EVEN WITH THE WHITE ROLLERS ON THE PAPER WINDOW.

①
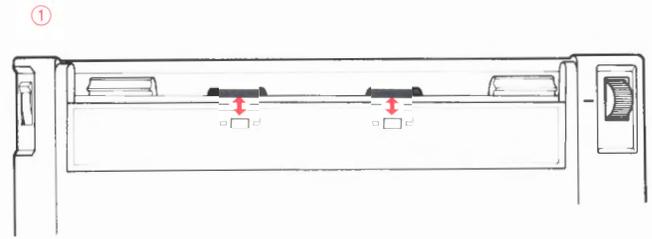
Make sure these rollers are even every time you load paper!

5

② OPEN THE PAPER WINDOW.
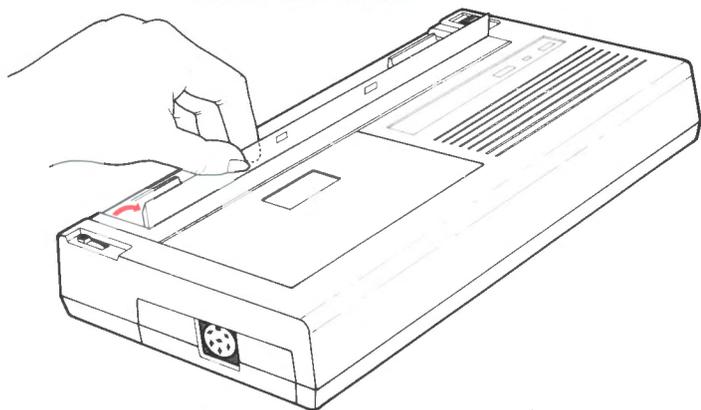
With the paper as a gauge, align the paper's holes with the round marks on the paper guides.

④
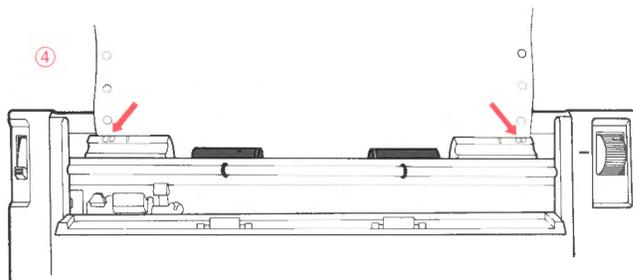
③ OPEN THE PAPER LEVER.

6
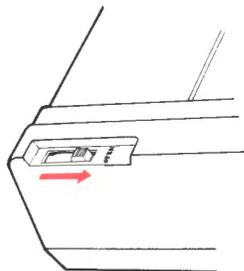
Need to adjust the paper guides?
- Snap the guide towards the printer front.
- Slide it left or right.
- Snap it back to lock it.

⑤

Paper guide
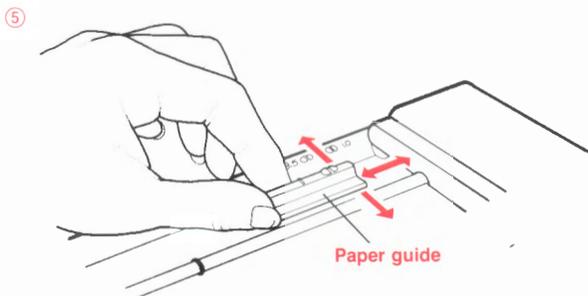
Printing on 9.5-inch computer paper?

MATCH THE GUIDES' ROUND MARKS WITH THE 9.5-INCH MARKS ON THE PRINTER BODY.

⑥
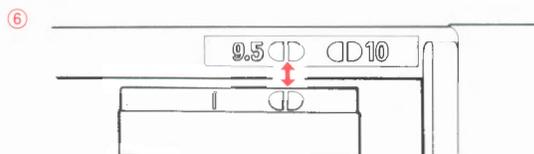
Once you tear off the perforations, this paper is actually 8.5 inches wide.

Printing on 10-inch computer paper?

MATCH THE GUIDES' ROUND MARKS WITH THE 10-INCH MARKS.

⑦

7
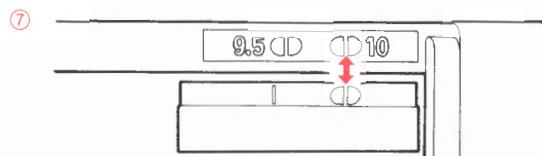
INSERT THE PAPER BEHIND THE PAPER GUIDES AND UNDER THE BLACK ROLLERS.

⑧
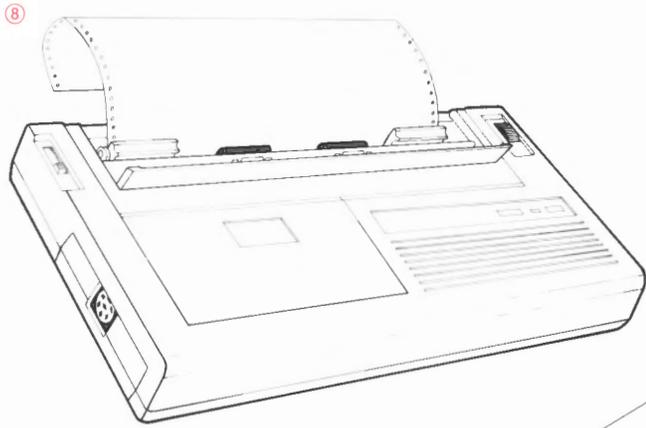
ADVANCE THE PAPER TO THE FRONT.
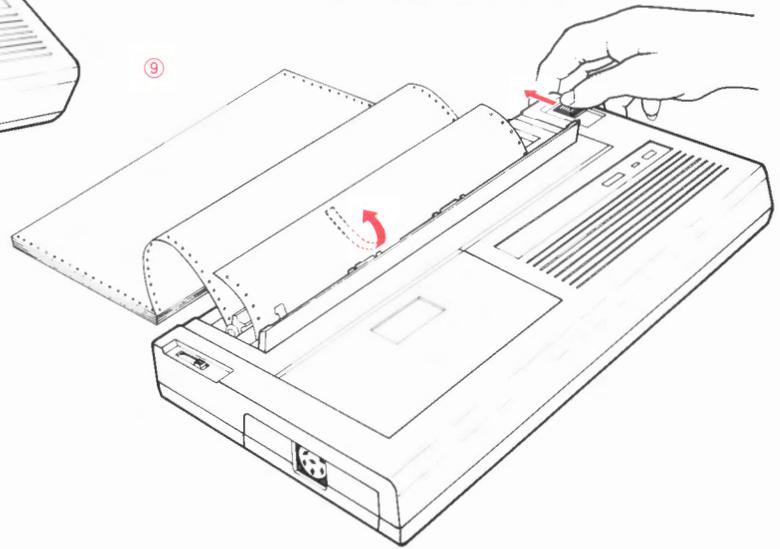
⑨

8

⑪
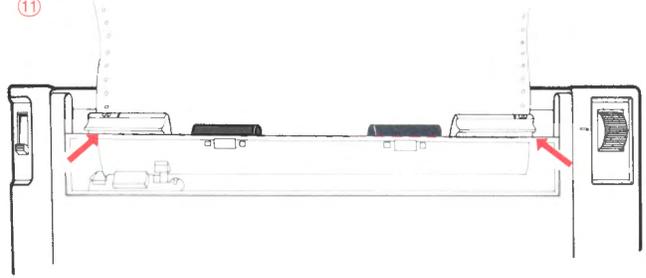
Snap the paper window shut.

⑩

IMPORTANT: Always advance the paper with the paper advance knob. If you reverse the paper, the paper feed could be affected.
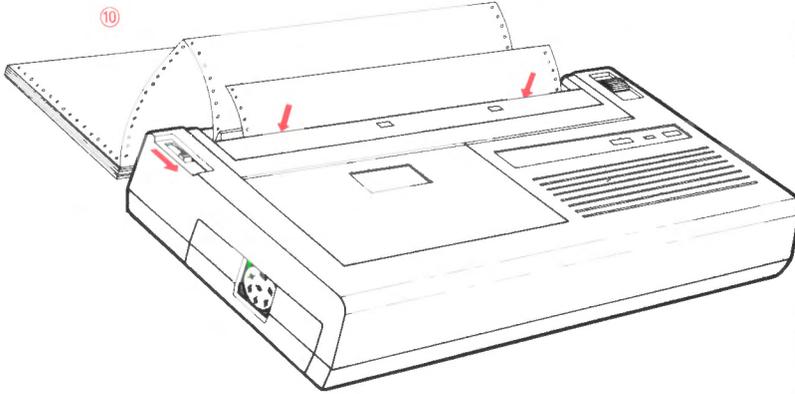
Leave the paper lever OPEN when printing on computer paper.

When you turn on OKIMATE, it records this position as its top-of-form position. OKIMATE starts printing 1/2 inch below this point.

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Loading the Ribbon

Insert the black ribbon now, and whenever you print the self test.

When you use thermal paper, you don't need ribbon.

② REMOVE THIS CLIP.

① OPEN THE RIBBON DOOR.

OPEN THE PAPER DOOR.

③ TURN THE BLUE THUMBDIAL COUNTERCLOCKWISE TO TAKE UP ANY SLACK.

10
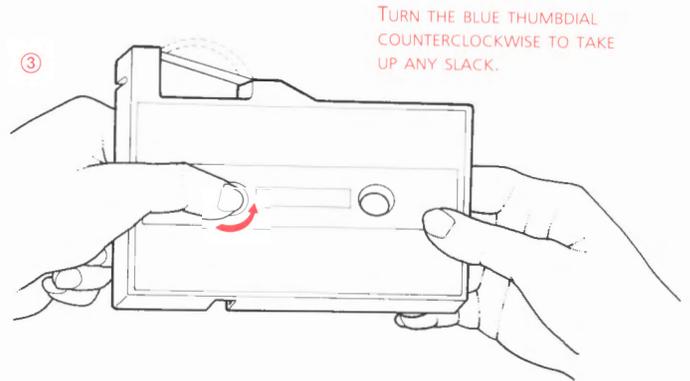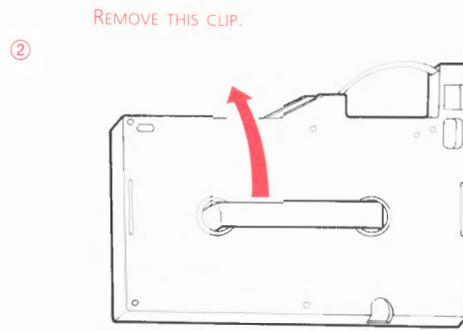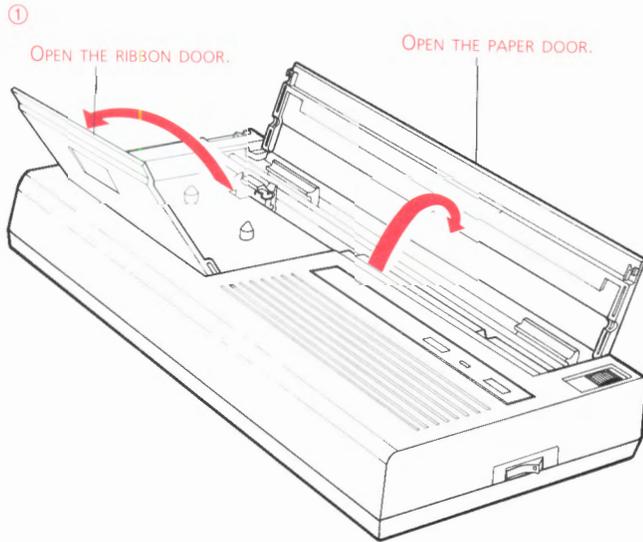
GENTLY MOVE THE PRINTHEAD TO THE FAR LEFT.

④
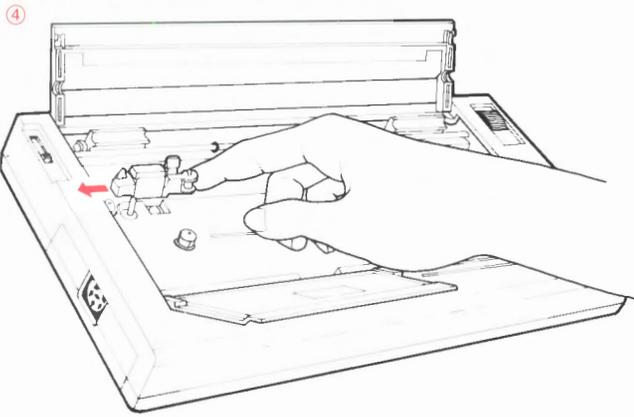
AS YOU LOWER THE CARTRIDGE INTO THE COMPARTMENT, SLIP THE RIBBON IN FRONT OF THE PRINTHEAD.

⑥

⑤

PULL THE PRINTHEAD BACK UNTIL IT LOCKS INTO PLACE.

⑦   RIBBON MUST FOLLOW THIS PATH.

Printhead

Gripper

11
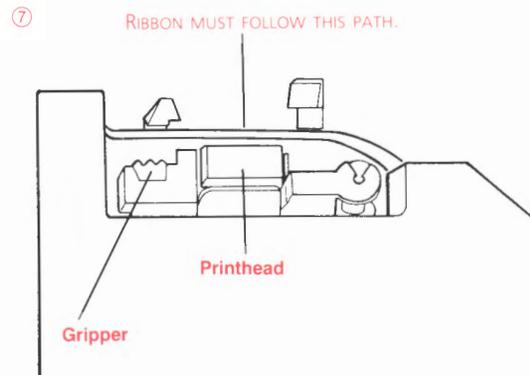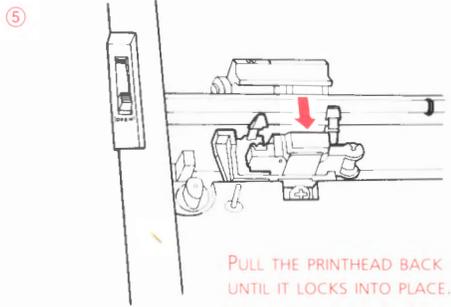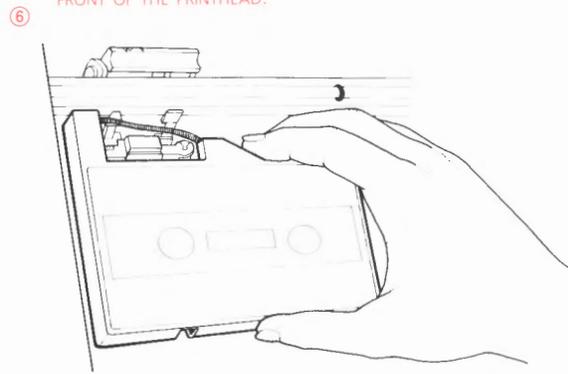
SNAP THE CARTRIDGE INTO
PLACE.

⑧
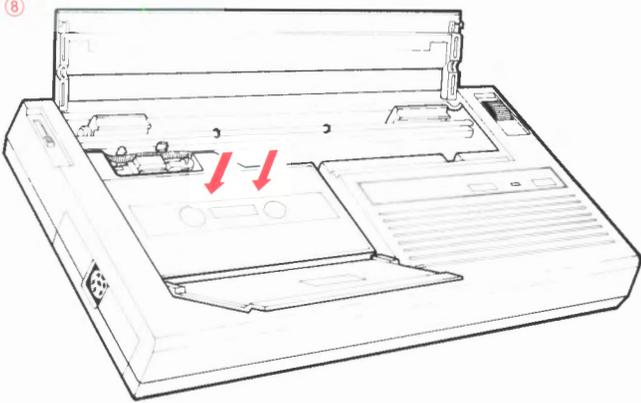
⑩

CLOSE THE RIBBON DOOR.

CLOSE THE PAPER DOOR.
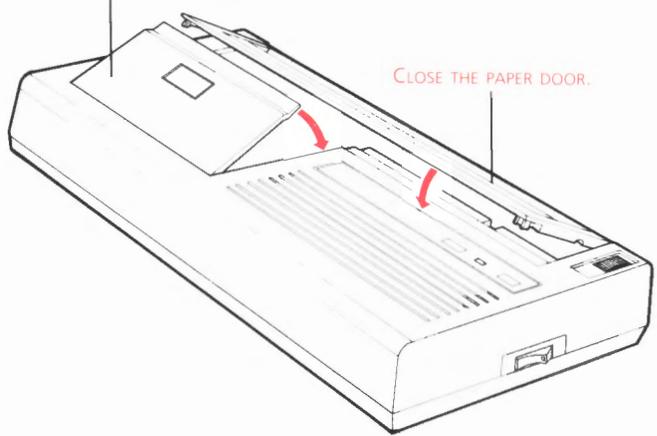
⑨
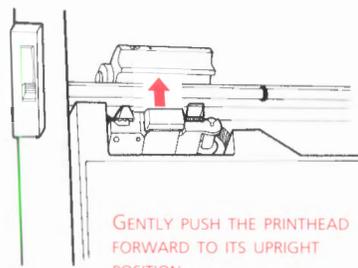
GENTLY PUSH THE PRINTHEAD
FORWARD TO ITS UPRIGHT
POSITION.

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Printing the Self Test

CAUTION: ALWAYS make sure OKIMATE's ON/OFF switch is OFF before plugging in your printer.

①
PLUG OKIMATE'S POWER CORD INTO A GROUNDED ELECTRICAL OUTLET.

Do NOT use an adapter which ignores the ground, or your printer could be damaged.

②
PUSH AND HOLD DOWN THE SELECT BUTTON. . .

WHILE TURNING ON OKIMATE.

After two seconds, release the SELECT button. . .

OKIMATE will start printing a test pattern of its characters:

```
CO 01.0
 !"#$%&'()*+,-../0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[£]↑←-♠|——-| h ⌣L⌄⌐
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[£]↑←-♠|——-| h ⌣L⌄⌐.
 "#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[£]↑←-♠|——-| h ⌣L⌄⌐■
 #$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[£]↑←-♠|——-| h ⌣L⌄⌐■
 $%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[£]↑←-♠|——-| h ⌣L⌄⌐■♥
```

To stop the test, turn off your OKIMATE.

13

NOTE: You can print this test pattern at any time, to make sure paper and ribbon are loaded correctly. If your test pattern doesn't print clearly as above, refer to pages 41 through 43 for help in correcting the problem.

Connecting to the Commodore

OKIMATE and Commodore must be OFF!

①

②

PLUG ONE END OF THE DATA CABLE INTO THE CONTROL MODULE.
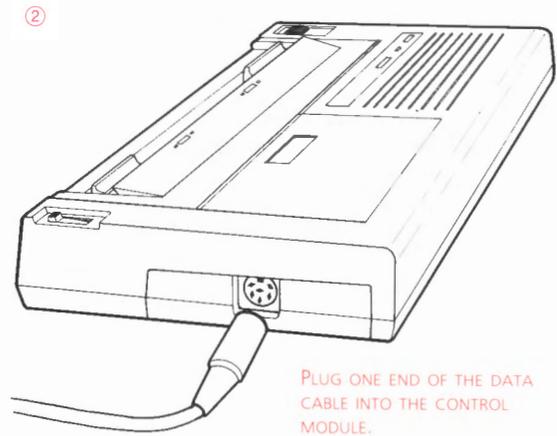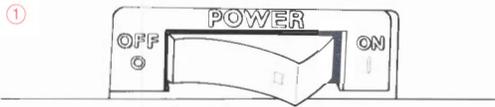
If you have a disk drive. . . . .   If you have no peripherals. . .

PLUG THE OTHER END INTO THE
DISK DRIVE.

PLUG THE OTHER END INTO THE
COMPUTER'S SERIAL PORT.

OKIMATE

OKIMATE

ATTACH THE DISK DRIVE'S
CABLE TO THE COMPUTER'S
SERIAL PORT.
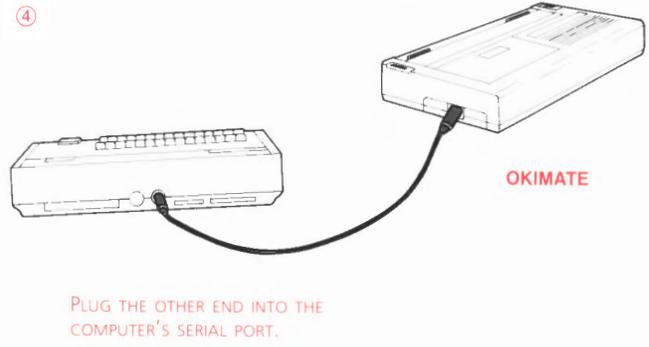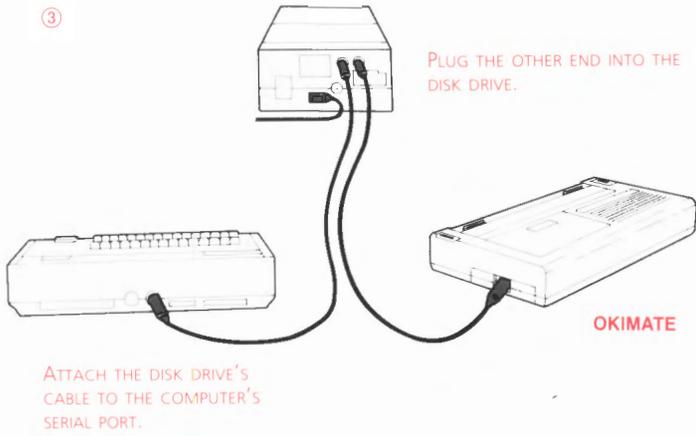
OKIMATE is always last in line!

More About OKIMATE

Now we'll take a closer look at your OKIMATE. This section explains what OKIMATE's controls and indicators do, and what kind of paper it uses and where to buy it. It also explains how to set up a few popular software packages for printing on OKIMATE.

OKIMATE Controls
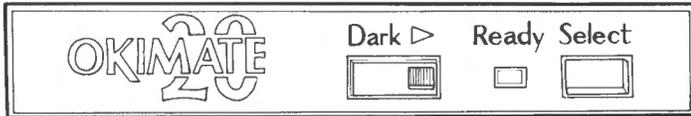
DARK

Its name says it all:

- Left for lighter print.
- Right for darker print.
- Experiment with its five settings to find the best for your printing needs.

READY

- This light is steady when OKIMATE is printing or ready to receive data.

- It blinks slowly when OKIMATE isn't ready to receive data. This happens when you push the SELECT button, or if OKIMATE is out of paper or ribbon.

SELECT

- Pause and restart:

  Push this button to pause and restart the printer during printing. OKIMATE won't stop until the printhead reaches the end of a line (or all three colors are printed).

- Self test:

  Hold this button down while turning on the printer for a self test.

- Form feed:

  Push the SELECT button to pause the printer, then hold the button down for two seconds. This advances the paper to the top of the next page.

ON/OFF Switch

Make sure this switch is in its OFF position before you plug in OKIMATE.

Choosing Paper

With the 24 tiny heat elements on its printhead, OKIMATE forms a unique pattern of dots for each character. When these elements heat up and press against the ribbon, they transfer the ribbon's wax-like coating onto the paper.

Always use SMOOTH paper and avoid any paper with high rag content (a rough finish). Here are a few examples:

- Any paper recommended for Savin copiers.
- Rediform Paper.
- Schoeller Paper.
- Hammermill Plain Paper for thermal transfer printers. Available in continuous or single sheet form.
- Duplicator paper with a SMOOTH surface.

If you need transparencies for a presentation, you can also print on acetate sheets up to .005 inch thick. Xerox transparencies and Scotch/3M 544 Transparency Note Pad, and Scotch 590 Write On Film work well, but you can experiment with others.

If you want to print without a ribbon, you can use thermal paper, a chemically-treated, heat-sensitive paper available at many computer and stationery stores.

Most thermal paper is sold in rolls, which must meet these specifications:

Width:	8 1/2 inches
Roll diameter:	2 1/4 inches
Core diameter:	1/2 inch
Heat sensitivity:	185°F ± 20

You'll find instructions for installing the optional roll stand on page 20.

How to Order

You can order computer paper, ribbons, the optional roll paper stand, replacement printheads, and other supplies for your OKIMATE by completing the order form and mailing it to:

Precision Images
P.O. Box 866
Mahwah, NJ 07430

You can also order by calling: 1-800-524-8338. (In New Jersey, call 1-800-624-1076.) We accept VISA and MasterCard.

Inserting Single Sheets

Make sure the black and white rollers are even, then open the paper window as shown on pages 5 and 6.

Align the paper edges with the straight lines on the paper guides.
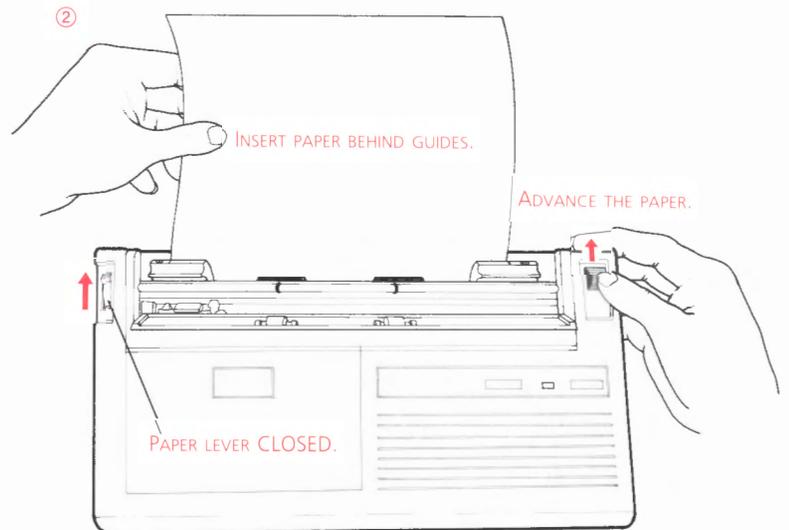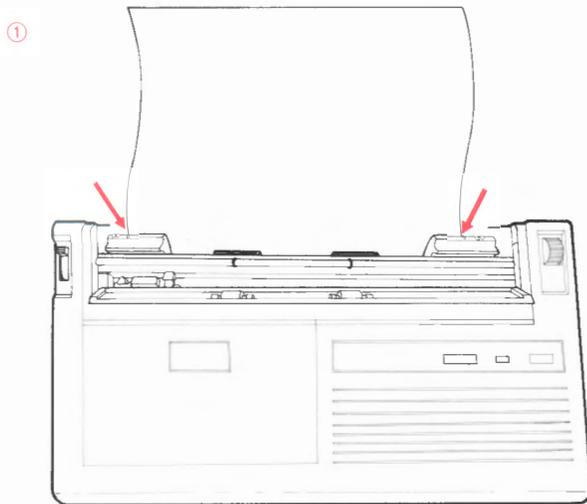
Adjust the guides if necessary (see page 7).

18

Need to straighten the paper?
- Open the paper lever.
- Adjust the paper.
- Close the paper lever.

③

④
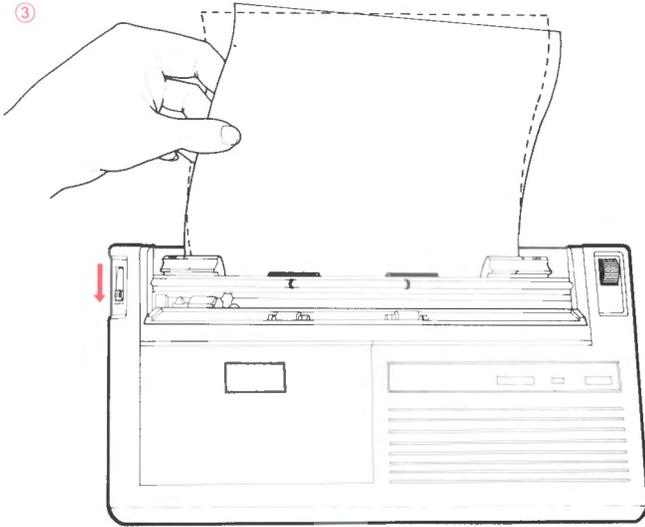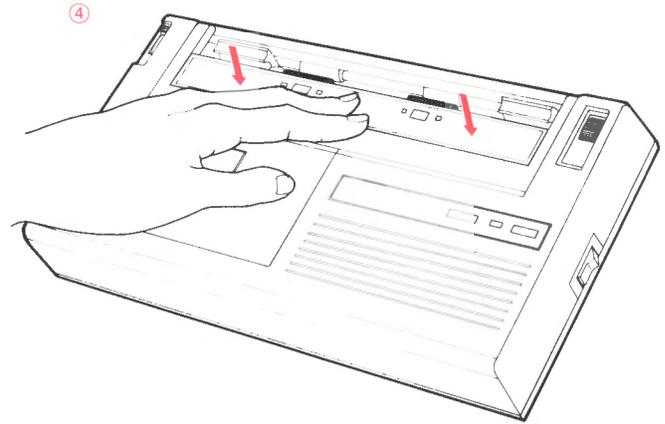
Make sure the top of the sheet is even with the paper window. Printing will start 1/2 inch below this point.

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Inserting Roll Paper

First install the roll paper stand (see page 17 for ordering information):

① LIFT UP THE ROLL PAPER STAND'S ARMS.

② FOLD THE ARMS.

20
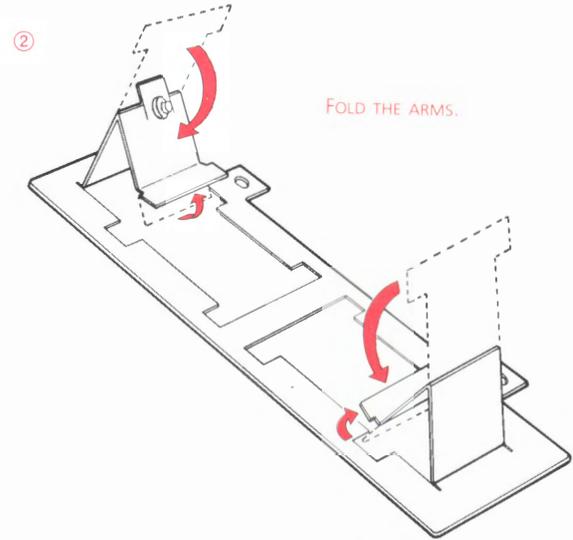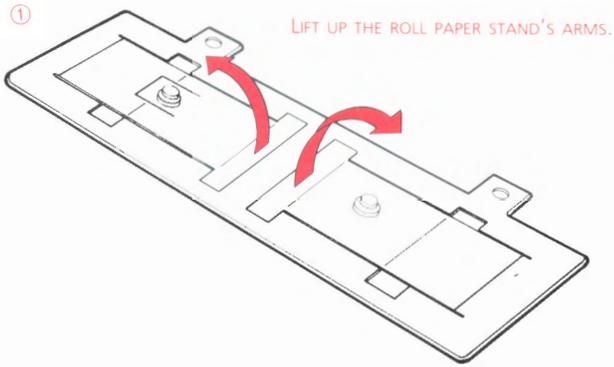
③ SNAP THE ARM CUTOUTS ONTO THE BASE OF THE STAND. THE FOLDED ARMS SHOULD STAND ALONE.
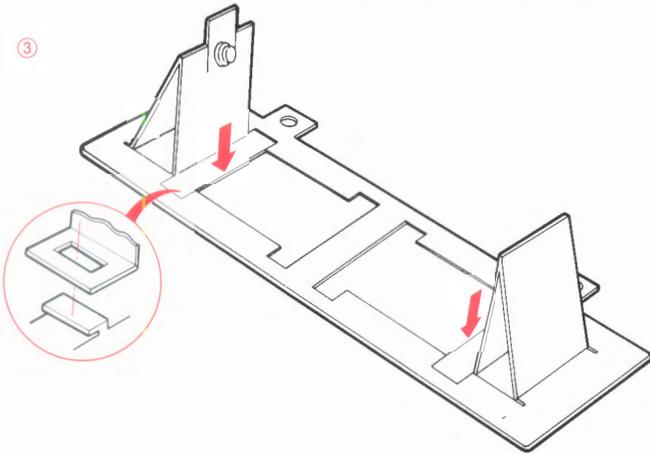
④ FIT THE ROLL STAND TABS INTO THE GROOVES AT THE BOTTOM REAR OF THE PRINTER.
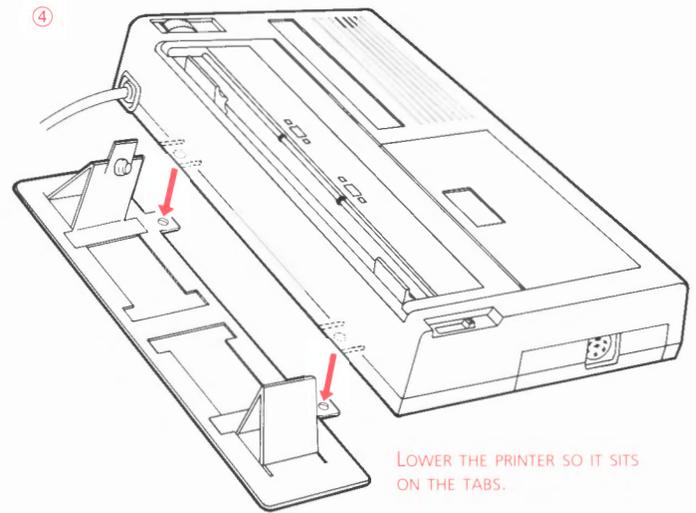
LOWER THE PRINTER SO IT SITS ON THE TABS.

21

Follow the instructions for single sheets on page 18.
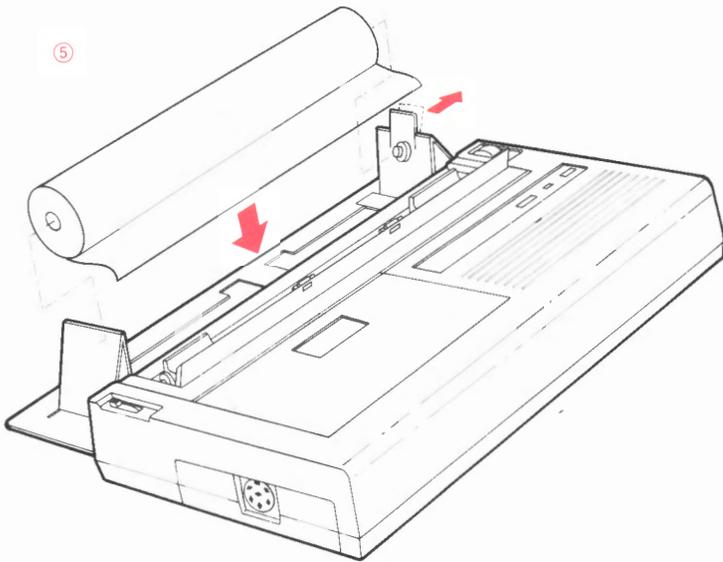
Printing with OKIMATE

When you unpack the Commodore Plug 'n Print module, it is set up so that:

- OKIMATE prints with Commodore's version of ASCII (American Standard Code for Information Interchange) character set of letters, numbers, symbols, and printer commands.

- Page length is 11 inches.

- The printer device number is 4. (Commodore computers recognize device numbers 4 and 5 as printers.)

- OKIMATE feeds the paper one line automatically after it prints a line.

If you are satisfied with these settings, OKIMATE is ready to print for you. If you'd like to change any of the above features, you must remove the control module and reset the function switches. You'll find instructions on page A-2.

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If you plan to print letters you've written or graphs you've drawn with a software package, first study your software's instructions for controlling printing. They will tell you how to obtain a printed copy of what you've been working on. For example, Infocom's "Hitchhiker's Guide to the Galaxy" lets you print each step of your adventure. Waveform's Musicalc 2 can print out a score for you. Broderbund's Printshop lets you create banners and other printer special effects.

Most computers use a standard numerical coding system of characters called ASCII. Commodore printers, however, use a different coding system called Commodore ASCII. Since OKIMATE uses Commodore ASCII, be sure to follow your software package's directions for Commodore printers or Commodore ASCII. When you set up your software package, select OKIMATE from its menu of printer types. If OKIMATE is not listed, choose COMMODORE ASCII, or Commodore printer model 801, 802, or 1525.

Once you've set up your software package to operate with OKIMATE, read your software instructions to find out how it controls the printer's features, such as underlining. Software packages

Software Packages

In the next few pages, you'll find tips on printing software package files with your OKIMATE. Section 3 provides a brief introduction to writing programs for OKIMATE.

handle printer control codes in four general ways:

- Separate files (sometimes called "drivers") assign codes to particular keys. Usually, the package comes with files for particular printers. You can customize these ready-made files, or create your own. PaperClip uses this method.

- You assign a list of codes to particular keys and insert the list into each document file. EASY SCRIPT and WordPro 3 Plus work this way.

- Wherever you want to use a printing feature in a file, you press a particular series of keys before and after the OKIMATE control codes.

- In some accounting and spreadsheet programs, you can add codes when you give the command to print a document. You can use this option to change printing styles for the entire document, to print in condensed type, for example.

Some software packages may let you use OKI-MATE's special features, such as different sizes and styles of type, but read the software manual to be sure it offers a particular feature. Your software may not let your OKIMATE do everything it's capable of. You may not be able to turn a feature on and off in the middle of a line, for example, or only be able to print an entire file with a particular feature. In any case, you'll need the control codes for the printing features you want. On page C-2 the Command Summary lists the control codes in decimal and hexadecimal form. Be sure to use the form your software instructions tell you to use.

IMPORTANT: The setup instructions for these three software packages were developed on one version. Revisions to the software package may affect the procedures described here.

PaperClip

In the next few pages, we'll show you how to en-ter OKIMATE's control codes in PaperClip's printer setup file. We will enter the codes for underlin-ing, Near Letter Quality and draft print, super-scripts and subscripts, italics, and bold print. With the same technique, you can enter other codes if you'd like. Once you've customized PaperClip for OKIMATE as explained in *Setting Up PaperClip*, you don't have to repeat these steps. Just follow the instructions for editing (page 28) and printing (page 29) your PaperClip documents.

NOTE: Brackets mean press that key. For example, <RETURN> means press the RETURN key, <DEL> means press the DEL key, <CRSR DOWN> means press the CRSR DOWN key, and <CON-TROL> means press the CONTROL key.

Setting Up PaperClip

1. Insert the PaperClip battery pack into the Commodore control port 1.

2. Turn on your computer. READY will ap-pear on the screen.

3. Insert the PaperClip disk in drive A, then type:
   **LOAD "PRINTER SETUP-D",8
   <RETURN>**

   If the program responds that SETUP-D does not exist, type:
   **LOAD "PRINTER SETUP-E",8
   <RETURN>**

   NOTE: First installation only.

4. When READY appears, type:
   RUN <RETURN>

5. When screen asks—Load character set?—type:
   Y <RETURN>

6. When screen asks—File name?—type:
   standard CBM <RETURN>

7. The screen will fill with random charac-ters, gradually clear, then ask: Load previous file?

8. Type: **Y <RETURN>**

25

9. When screen asks—File name?—type:
   1525-p-alf <RETURN>

10. Screen asks: ASCII value for
    '@'? ..? 64

11. Hold down **<CONTROL>**, and type:
    0 (zero)

12. Screen asks:

    Carriage return (line feed)?

13. Press **<CRSR DOWN>** until this appears:

    Underline begin characters?
    ? □

NOTE: In step 14 we're going to enter OKIMATE's control code for underlining. You'll press <DEL> to erase the current entry, then type the new entry. Once you've entered the entire code, you press <RETURN> to skip over the entries you don't need to change, such as Secondary address. Follow this same procedure to enter the other control codes. Be sure to enter all parts of the code. Skip over items you don't want to change by pressing <CRSR DOWN>.

14. To enter code to begin underlining:
    - Press **<DEL>** to erase the current entry.

- Enter first part of code:
  27 <RETURN>
- Press **<DEL>** to erase the next entry.
- Enter second part of code:
  67 <RETURN>
- Press **<RETURN> <RETURN> <RETURN>**
- Secondary address? appears.
- Press **<RETURN>**

NOTE: Use the above procedure to enter all of the following codes.

15. Enter code to end underlining:
    27 68

16. Enter code to begin boldface characters (here the NLQ code):
    27 71

17. Enter code to end boldface (actually the code for draft print):
    27 69

26

18. Screen asks:

    Underline begin (no line feed)?

19. Press **<CRSR DOWN>** until this appears:

    Superscript begin charac-
    ters?

20. Enter code to begin superscripts:

    27 74

21. Enter code to end superscripts:

    27 75

22. Enter code to begin subscripts:

    27 76

23. Enter code to end subscripts:

    27 77

24. Enter code to begin italics:

    27 37 71

25. Enter code to end italics:

    27 37 72

26. Screen asks:

    Value to add for italics
    characters?

27. Press **<CRSR DOWN>** until this appears:

    Pitch=12 characters per
    inch?

28. Enter code for 12 CPI:

    28

29. Enter code for 17 CPI:

    29

30. Enter code for 8.5 CPI (bold):

    29 14

31. Press **<CRSR DOWN>** until this appears:

    Secondary address for text?

32. Press: **<RETURN>**

33. Hold down: **<CONTROL> <SHIFT>**
    Then type: **9**

34. Screen asks:

    File name?

35. Type:

    OKIMATE 20 <RETURN>

36. Screen asks:

    Drive number?

37. Type:

    0 <RETURN>

38. Now PaperClip is customized for printing documents on OKIMATE.

Creating or Editing a PaperClip Document

Make sure the data disk is still in the disk drive.

1. Type:

    LOAD "P∗",8 <RETURN>

2. When READY appears, press:

    <CONTROL> W

3. When screen asks—File name? type:

    OKIMATE 20 <RETURN>

4. This loads the printer driver.

NOTE: If you're creating a new file, skip to step 7.

5. Press:

    <CONTROL> L

6. Screen asks:

    File name?

7. Type the name of the document you want to edit. The document will appear on the screen.

8. As you write a document, you might want to change printing styles. Here are a few examples entered at the beginning of the document (or paragraph):

    - To start 10 CPI printing:

      Press **<£>** then type: **pt10**

    - To set left margin to 10:

      Press **<£>** then type: **lm10**

    - To set right margin to 70:

      Press **<£>** then type: **rm70**

IMPORTANT: Use the appropriate change code for the printing style you want. Your PaperClip manual has a list of change codes.

Here are some sample formats for other character sizes. Remember to press the **<£>** key before entering each format code.

- 12 CPI printing; left margin set to 12; right margin set to 80:

  pt12:lm12:rm80

28

- 17 CPI printing; left margin set to 17; right margin set to 119:

  pt17:lm17:rm119
- 5 CPI printing; left margin set to 5; right margin set to 35:

  pt5:lm5:rm35

Printing a PaperClip Document

1. Press **<CONTROL> O**
2. Screen asks:

   Continuous output?
3. Unless you're printing on roll paper, type:

   N <RETURN>
4. When screen asks—Fill variable blocks?—type:

   N <RETURN>
5. When screen asks—Number of copies?—type:

   1 <RETURN>
6. When screen asks—Starting page?—type:

   1 <RETURN>

7. Screen asks:

   Global?

If you want to print the document you've been editing. . .

8. Type: **N <RETURN>**
9. OKIMATE will print the document.
10. To exit PaperClip, press:

    <CONTROL> X

If you want to print another document. . .

8. Type: **Y <RETURN>**
9. When screen asks—File name?—enter name of your document, then press:

   <RETURN>
10. OKIMATE prints your document.
11. To exit PaperClip, press:

    <CONTROL> X

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EASY SCRIPT

IMPORTANT: Be sure to read your software manual before following any of these instructions.

First we'll show you how to set up EASY SCRIPT to work with OKIMATE.

NOTE: Brackets mean press that key. For example, <RETURN> means press the RETURN key, <DEL> means press the DEL key, <CRSR DOWN> means press the CRSR DOWN key, and <CONTROL> means press the CONTROL key.

1. Insert your EASY SCRIPT disk in drive A, then type:

   LOAD "O:*",8,1 <RETURN>

2. When READY appears, type:

   RUN <RETURN>

3. When screen asks—Text Width?—type:

   80 <RETURN>

   (This sets column width to 80.)

4. When screen asks—Disk or Tape?—type:

   D <RETURN>

   NOTE: Enter **T** for tape, **D** for disk.

5. When screen asks—Printer Type?—type:

   0 <RETURN>

   (OKIMATE is similar to the Commodore printer.)

6. The edit mode screen appears.

7. Enter these commands to assign printer features to the numbers 0 to 6:

   - Assign the command for turning on draft print—27 69—to the numbers 0 and 1:

     Press **<F3>** Type **0 = 27**

     Press **<F3>** Type **1 = 69**

   - Assign the command for turning on double-width printing—14—to the number 2:

     Press **<F3>** Type **2 = 14**

   - Assign the command for turning on normal 10 CPI printing—15— to the number 3:

     Press **<F3>** Type **3 = 15**

   - Assign the command for turning on

fine (17 CPI) print—29—to the number 4:

Press **<F3>**   Type   **4 = 29**

- Assign the command for reverse printing—18—to the number 5:

  Press **<F3>**   Type   **5 = 18**

- Assign the command for normal black on white printing—146—to the number 6:

  Press **<F3>**   Type   **6 = 146**

NOTE: You can assign up to 10 values. These are just examples of how you do it.

Creating an EASY SCRIPT Document

Wherever you want to change printer features in a document, press the <F1> key, then type the number you assigned to the feature. Here are some examples.

- To expand the character size (start double-width printing):

  Press **<F1>**   Type   **2**

- To return to normal (10 CPI) print:

  Press **<F1>**   Type   **3**

Printing an EASY SCRIPT Document

1. Press: **<F1>**
2. Type: **O** (capital letter)
3. Type: **C**
4. Type: **P**
5. OKIMATE prints the document.

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WordPro 3 Plus

IMPORTANT: Be sure to read your software manual before following any of these instructions.

First we'll show you how to set up WordPro 3 Plus to work with OKIMATE.

NOTE: Brackets mean press that key. For example, <RETURN> means press the RETURN key, <DEL> means press the DEL key, <CRSR DOWN> means press the CRSR DOWN key, and <CONTROL> means press the CONTROL key.

1. Turn on your computer and insert the WordPro 3 Plus disk.

2. When READY appears, type:

   LOAD "∗",8 <RETURN>

3. When READY appears, type:

   RUN <RETURN>

4. When menu appears, select 8027 by typing:

   8 <RETURN>

5. When Number of lines? appears, type:

   329 <RETURN>

6. When Printer device? appears, type:

   4 <RETURN>

7. When Printer? appears, select ASCII by typing:

   A <RETURN>

8. When Disk drive? appears, type:

   08 <RETURN>

9. When the status line appears, press and release:

   <CONTROL> then type: ∕

10. When the checkmark (✔) appears, assign printer commands (in decimal code) to locations 0 to 6 by typing:

    0 = 29:1 = 15:2 = 145:3 = 17:4 = 14:5 = 146:6 = 18

11. This enters these printer commands (decimal codes are in parentheses):

    0 = fine print (29)

    1 = normal print (15)

    2 = Cursor Up mode (145)

32

3 = Cursor Down mode (7)

4 = wide print (14)

5 = print black on white (146)

6 = reverse print—black background printed (18)

NOTE: You must enter the command for Cursor Down mode at the front of each document.

Entering Features in a WordPro 3 Plus Document

Anytime you want to use any of the above features in a document, follow these steps:

1. Press and release: **<CONTROL>**

2. Type: **;**

3. Enter the code number for the feature you want. For example,

   ● To start wide print, type:

      4 <RETURN>

   ● To start 10 CPI print, type:

      1 <RETURN>

4. You can also change margin settings by inserting the commands for left margin (lm), right margin (rm), and justifying text (ju), after the checkmark (✔). For example:

   ● Set left margin to 10, right margin to 70, and justify the text, by entering:

      lm10:rm70:ju1 <RETURN>

NOTE: You will probably want to change the margins whenever you change character pitch.

How to Print a WordPro 3 Plus Document

1. Press and release: **<CONTROL>**

2. Type: **O C <RETURN>**

3. OKIMATE will start printing.

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OKIMATE Software Disk and Color Screen Print Program

The OKIMATE software disk contains one demonstration program, DEMO, which displays how OKIMATE prints color and black/white graphics. DEMO lets you print your choice of three color pictures, or a black text. The program reminds you to load the color ribbon for color pictures, the black ribbon for text.

If you want to see the demonstration, turn on the Commodore, the disk drive, the monitor, and your OKIMATE. Insert the OKIMATE software disk, and select the demonstration. (Brackets indicate pressing that key.)

To select DEMO:

1. Type:
    LOAD "DEMO",8 <RETURN>

2. When READY appears, type:
    RUN <RETURN>

3. The first screen asks you to wait a moment for the program to load.

4. Next, the OKIMATE COLOR DEMO menu will appear.

5. Type your selection.

6. The screen will remind you to load color or black ribbon.

7. After loading the proper ribbon, press:
    <RETURN>

8. OKIMATE will print a color picture or black text.

9. You can exit the program or try as many demos as you like.

OKIMATE's Color Screen Print Program

The software disk also contains OKIMATE's special Color Screen Print program which lets you print the pictures and graphics you draw with several popular graphics packages. This program works only with the Commodore 64, the SX64, and 128 (in 64 emulation mode) model computers, and a compatible graphics software package, such as:

Doodle!	Paint Magic
Edumate	Chalkboard
Koala Pad	Sorcerer's Apprentice
Super Sketch	Blazing Paddles
Flexidraw	

34

Working with these paint, draw, and sketch packages, you can create your own graphics designs and pictures. Once you've saved your designs on a disk, OKIMATE, through its Color Screen Print program, can convert what you've recorded on your graphics package disk into a printout on paper. OKIMATE can reproduce brilliant colors for your graphic designs, bar charts, and pie charts.

Follow these easy steps to load and run the Color Screen Print (CSP) program:

1. Type:

   LOAD "CSP",8 <RETURN>

2. When READY appears, type:

   RUN <RETURN>

3. The screen will ask you to wait a moment while the program loads.

4. When OKIMATE COLOR PRINT copyright statement appears, press <RETURN> to continue.

5. Screen asks you to select the picture format; that is, the graphics package you're using (Doodle, Koala, Super Sketch, etc.).

6. Type your selection.

7. Screen tells you to insert your picture disk in the disk drive.

8. Insert the disk on which you have saved your pictures, then press the **<RETURN>** key.

9. Screen displays your disk directory.

10. Make your selection and press the **<RETURN>** key.

11. Program asks you to select color (1) or gray (2).

COLOR Palette

12. Type: **1 <RETURN>**

13. Screen tells you to load the color ribbon.

14. Load color ribbon, then press the **<RETURN>** key.

15. OKIMATE will print your picture in color.

GRAY SCALE Palette

12. Type: **2 <RETURN>**

13. Screen tells you to load the black ribbon.

14. Load black ribbon, then press the **<RETURN>** key.

15. OKIMATE will print your picture in shades of gray.

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Section 2: Printer Care and Problem-Solving

Your OKIMATE requires little maintenance—just cleaning it occasionally will keep it in top printing shape. If you need extra help, the problem-solving guide on page 41 will solve most problems. If there's ever a mechanical problem requiring a technician, don't try to fix it yourself. Instead use the repair and warranty information in the back of this handbook.
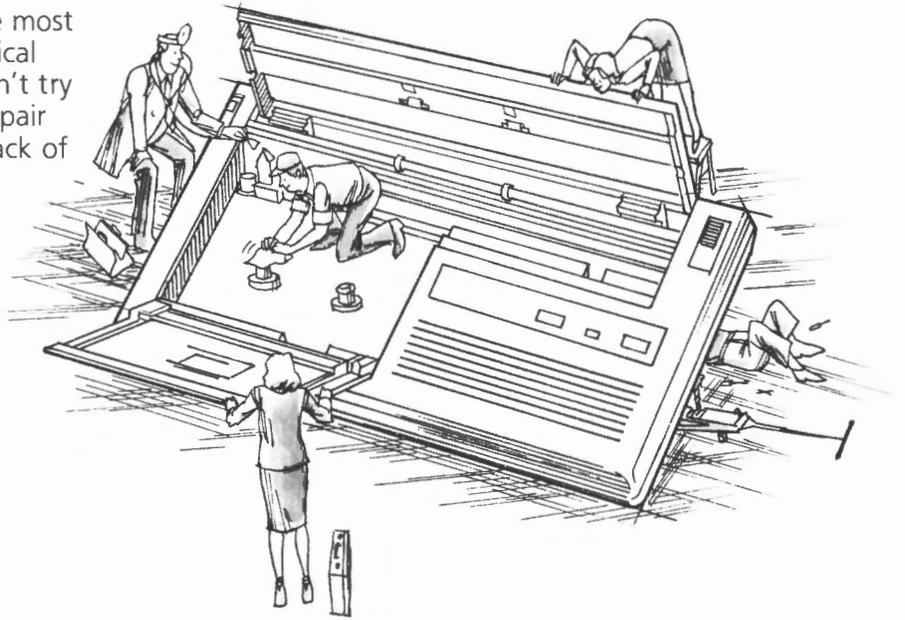
Cleaning the Printer

Wipe OKIMATE's paper window with a clean cloth whenever dirt or dust starts to accumulate.
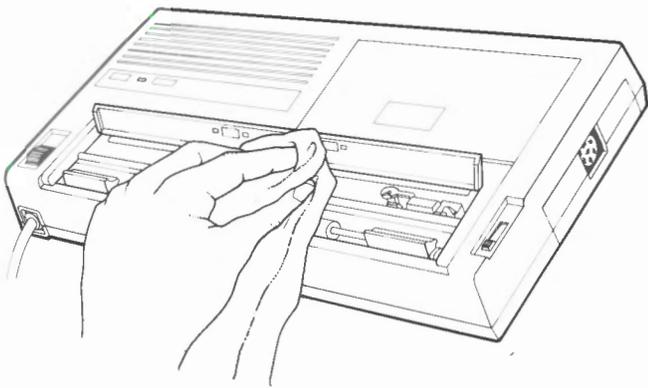
Clean the OKIMATE printhead when you change the ribbon, or whenever you notice the print fading or missing print dots.

Here's how to clean the printhead:

CAUTION: Whenever you clean the printhead, handle it very carefully.

1. Turn off and unplug the printer.
2. Open the paper and ribbon doors.
3. Pull back the printhead until it locks with a snap.
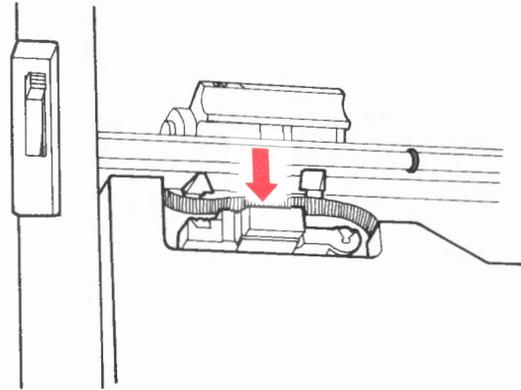
4. Remove the ribbon cartridge.
5. Return the printhead to its upright position.

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6. Unsnap the printhead lock lever, leaving the printhead carriage upright.
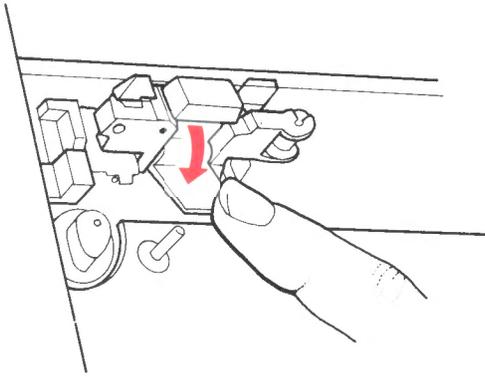
7. Grasp the blue cap attached to the printhead, then lift the printhead out of its assembly.
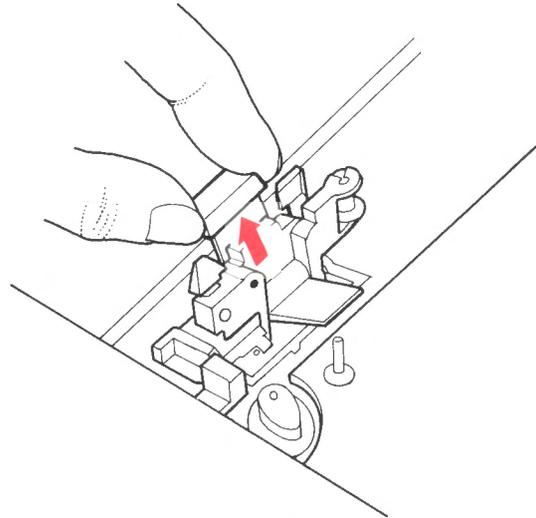
NOTE: Always handle the printhead by the protective plastic cap or along its sides. Do not touch the thermal surface.

8. Clean only the thermal surface (the gray area next to the protective cap), and the gold edge-connector contacts.

9. Wipe the thermal surface with a clean, lint-free cloth moistened with alcohol or an alcohol-based solution, such as a type-writer typeface cleaner. Wipe off all ink (wax) and paper lint.
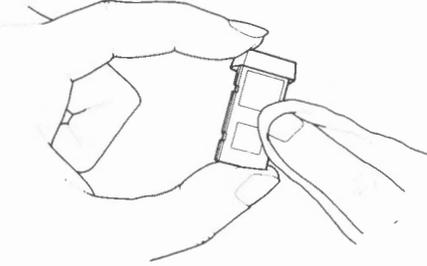
10. When cleaning, place the printhead on a flat surface with the protective cap off the edge of the flat surface. Do not exert too much downward pressure near the center of the assembly.

11. With a soft, lint-free cloth moistened with alcohol, wipe the gripping edge of the printhead carriage. Wipe off all ink and paper lint.

39
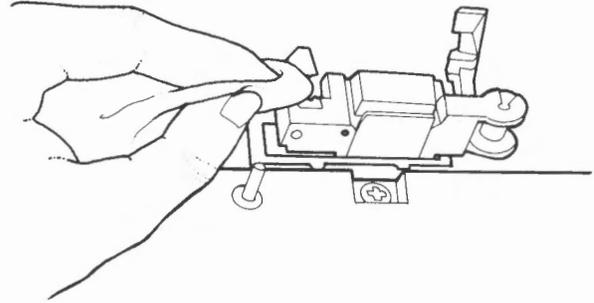
12. With the printhead carriage straight up, replace the printhead. Make sure the thermal surface faces the paper.
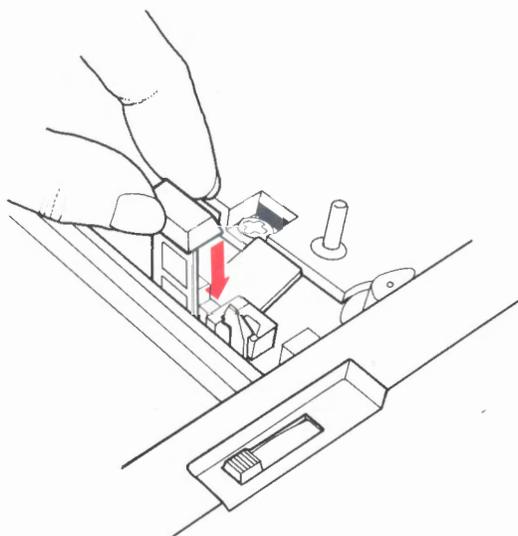
13. Push the printhead lock lever back up.
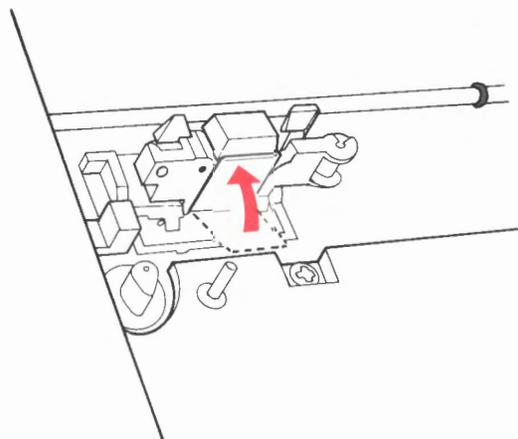
The printhead must be locked in place!

14. Replace the ribbon cartridge.
15. Close the paper and ribbon doors.

Replacing the Printhead

If you notice the characters or graphics printed by your OKIMATE are not fully formed, with one or more dots consistently missing, your printhead may need replacing. First make sure the ribbon is threaded properly, then clean the printhead (see page 37). If that doesn't help, replace the print-head. See page 43 for information on ordering all parts and supplies.

Remove the old printhead by following steps 1 through 7 on pages 37-38. With the printhead carriage upright, insert a new printhead, making sure the black thermal surface faces the paper.

Problem-Solving

What do I do if?

The printer doesn't work and the READY light doesn't go on?

Make sure the control module and data cable are connected, and the printer and computer are plugged in and turned on.

The READY light blinks slowly?

Push the SELECT button. If the light still blinks slowly, the printer is out of ribbon or paper. Add paper or ribbon, then push the SELECT button.

Printing becomes faded or blurred?

The printhead needs cleaning. Follow the cleaning steps described on pages 37 through 40.

The ribbon becomes loose or tangled?

Carefully remove the ribbon cartridge from the printer. Turn the cartridge's blue thumbdial counterclockwise to take up the slack. Make sure the ribbon isn't twisted, before you reinsert the ribbon.

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The paper is difficult to load or feeds incorrectly?

Adjust the paper guides so their outer marks line up with the computer paper's sprocket holes. If you have single sheet or roll paper, adjust the paper guides so their inner marks line up with the edges of the paper. (See page 18.) Also, make sure the black plastic rollers in the paper slot at the back of the printer are lined up with the white rollers on the paper window. Slide them to the correct position. (See page 5.)

My printout looks like this?

Ѳﾑ₽ﾌᏩᏆᏴᏀᎻᏆ.ᎫᏦᏞ ᎷᎥᎾᏢᏀᎡᏚᎢᏌᏙᏔᏇᎩᏃᏍ

With improper ribbon feeding, OKIMATE will print on used ribbon. Make sure the ribbon is threaded as shown on page 11. The ribbon must pass between the left post and the gripping edge of the printhead carriage.

When printing an 8-inch wide color image, the color ribbon "slips" at the end of each line, printing the wrong color on the right edge of the image?

Clean the gripper. (See page 11 for gripper loca-tion.) Also make sure the ribbon is threaded properly (see page 11). The ribbon must pass between the left post and the printhead carriage.

My printout looks like this?

You're printing on rough-textured paper. (This sample was printed on cotton bond.) Try using paper with a smoother finish like the ones described on page 17.

My printout looks like this?

The paper isn't feeding smoothly. Make sure the paper path is not blocked. If something is lying on the paper, or if the paper gets caught, a full line feed may not occur.

```
THIS IS THE FIRST LINE
THIS IS LINE TWO
LINE THREE IS NORMAL
```

Improper line feeding between the first and second lines occurs when you use the paper advance to move the paper backwards. Use this knob only to advance the paper.

My printouts have dull patches in black printing, or, in color there are patches that are dull or where color is light or wrong (often brown)?

The DARK control is set too high, and the ink is not transferring properly. Slide the DARK control to the left to a lower setting.

OKIMATE double spaces the lines of text, or overprints lines of text?

Make sure function switch SW6 is set correctly. If you're getting double-spaced text, set SW6 to ON. If OKIMATE overprints lines of text, set SW6 to OFF.

If you still have questions about operating OKIMATE that are not covered here, call 1-800-OKIDATA between 8 a.m. and 7 p.m. EST. A Customer Service representative will be happy to assist you.

654-3282

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Service Information

ordered printhead 7-21-87 1:20 PM

Paper, Ribbon, and Other Supplies

To order computer paper, ribbons, a replacement printhead, or other supplies for OKIMATE, call us toll-free at 1-800-524-8338. In New Jersey, call 1-800-624-1076. We accept VISA and MasterCard for these supply orders only.

Printer Repairs

Your printer is covered by the terms decribed in the Limited Warranty statement at the back of this handbook. If your OKIMATE needs service, contact one of the three service centers listed below or call Customer Service at 1-800-OKIDATA. If the service representative tells you to ship your printer, you'll need to:

- Pack the printer, with the control module inserted, in its original carton and styrofoam, if possible. (Otherwise, pack the printer in a strong, corrugated cardboard box, and surround it with at least three inches of crumpled newspaper.) Include a

written description of the problem, the name of the software you're using, a print sample identifying the problem (if possible), and your phone number. For warranty repairs, you must also include a dated sales receipt.

● Ship the printer PREPAID and insured to the OKIDATA service center.

DO NOT SEND YOUR RIBBON CARTRIDGE, DATA CABLE, OR SOFTWARE DISKS.

OKIDATA SERVICE CENTERS

WEST	MIDWEST	EAST
843 Auburn Court	1155A W. Dundee Road	111 Gaither Drive
Fremont, CA 94536	Arlington Heights, IL 60004	Mt. Laurel, NJ 08054
(415) 657-0600	(312) 253-8055	(609) 235-2600

All repairs performed by an OKIDATA service center are warranted for 30 days.

Section 3: Programmer's Reference Guide

Many OKIMATE owners won't need to read this section. It describes the programming codes used by your printer to produce "special effects" like underlining, italics, and graphics. These codes are essential for writing your own programs, or using software that lets you install programming codes for special printing features.

Many software packages, however, control the printer directly. You simply have to select a "Print" command from the screen, and don't need to enter special codes. If you use your printer in this way, you can ignore this section.

45
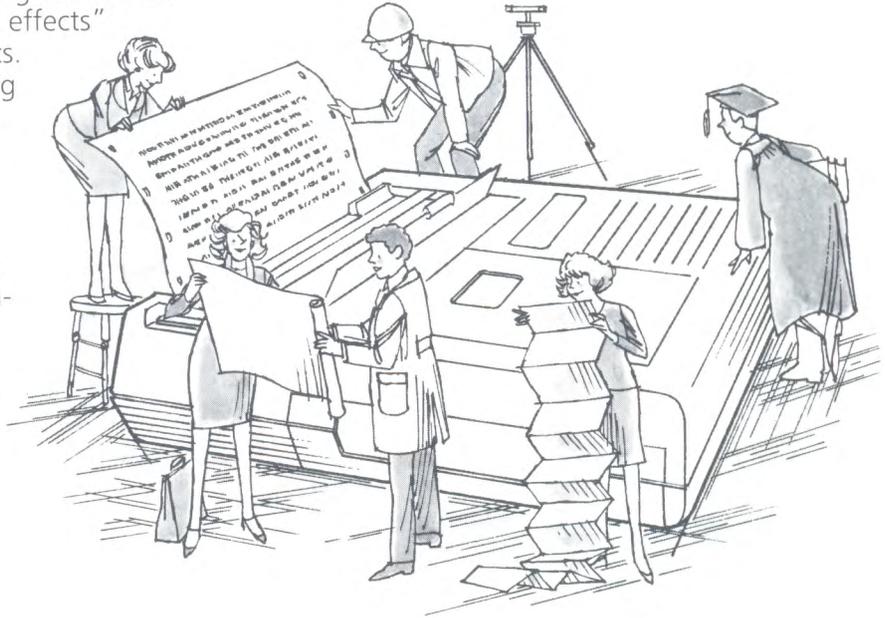
Writing Your Own Print Programs

In case you'd like to write your own **print programs**, here we'll describe some of the basics.

<table>
<tr><td>

What You Do

</td><td>

What Appears/What Happens

</td></tr>
<tr><td>

1. Start each print program with an OPEN statement, like this:

10 OPEN 3,4

┌─ device number

│

├─ logical file number

└─ line number

</td><td>

This statement opens a channel to the printer.

The second number after OPEN identifies the device the channel is opened to. OKIMATE is identified by 4. Other devices might be a disk drive or a a cassette tape. If you have two printers, assign one device number 4, the other device number 5.

The first number after OPEN, the logical file number (any number from 0 to 255), identifies the channel.

</td></tr>
</table>

2. Next enter the PRINT# statement:

20 PRINT#3, "OKIMATE PRINTS WHAT'S WITHIN THE QUOTES"

The number after PRINT# must be identical with the logical file number used in the OPEN statement.

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3. You can also enter a printer command in a PRINT# statement:

30 PRINT#3,CHR$(15);CHR$(14);"WIDE"

With these printer commands, you can change how OKIMATE prints.

Place quotation marks around everything you want printed.

4. After your last print statement, add a CLOSE statement:

40 CLOSE 3

This closes the channel to OKIMATE.

Be sure to use the same logical file number used in the OPEN statement.

How to Print a Program Listing

If you want a printout of a program you've written, follow the steps below. (That's right, no line numbers are needed here.) Each command will be executed as soon as you type it and press the RETURN key.

Be sure to use the same channel number (first number after OPEN) in all statements.

What You Do	What Appears/What Happens
1. **OPEN 3,4 <RETURN>**	This opens a channel to OKIMATE.
2. **CMD 3 <RETURN>**	OKIMATE prints:
	READY
3. **LIST <RETURN>**	OKIMATE prints the listing.

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4. **CLOSE 3 <RETURN>**

This line closes the channel and returns to normal operation.

READY appears on the screen again.

Your Commodore Owner's Guide and Programmer's Reference Guide will give you more details on these commands.

Changing the Printer Features

If you use a PRINT# statement followed only by text, OKIMATE gives you standard printing. If you want to specify other OKIMATE printing features, you can enter the appropriate control code with a CHR$ statement. You can stop a feature by sending its opposite code, or by turning off the printer.

When you write a program, insert the control code right before where you want the special effect. Sometimes, for more complex features, you will have to enter combinations of control codes. The first code in the combination is usually the ESCape code—CHR$(27)—which signals the printer to interpret the following codes as part of an instruction.

Commodore ASCII decimal code numbers 32 through 126 represent printable characters, including letters, numbers, and symbols (see the chart in Appendix B). Using a PRINT# with one of these codes causes it to print the corresponding character. For example, CHR$(65) equals the letter "A" in Cursor Up mode, or the letter "a" in Cursor Down mode. When an ASCII decimal code used in a command also represents a printable character, you can replace the decimal number by the actual character in quotes. For example, the command for underlining can be written as CHR$(27);"C" or CHR$(27);"c", depending on whether the computer is in Cursor Up or Cursor Down mode.

If you're writing your own programs, use the codes listed here for the features you want. Al-

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though we've included only the decimal codes in this streamlined introduction, you'll find the hexadecimal codes required by some programs in the Command Summary (Appendix C).

Sample Program

The printout below demonstrates many of OKI-MATE's printing features. The BASIC program needed to produce this printout follows. You can type and run the program yourself, or use it as a guide for writing other programs.

```
          OKIMATE PRINTS IN PICA, FINE, AND ELITE
          DOUBLE-WIDTH...BACK TO NORMAL

          START UNDERLINING UNDERLINE CANCELLED

          SUPERSCRIPTS: OKIDATA^T^M
          SUBSCRIPTS:   H₂O

          DRAFT PRINT...NEAR LETTER QUALITY


          THIS IS REVERSE PRINTING
          BACK TO STANDARD PRINTING

                    TEXT INDENTED 15 SPACES
                              49
```

Here's the program:

```
10   OPEN 1,4
20   PRINT#1,"OKIMATE PRINTS IN ";
     CHR$(15);"PICA, ";
25   PRINT#1, CHR$(29);"FINE, ";
     CHR$(28);"AND ELITE"
30   PRINT#1,CHR$(15);CHR$(14);"DOUBLE-
     WIDTH...";CHR$(129);"BACK TO NORMAL"
40   PRINT#1," "
50   PRINT#1,CHR$(27);"C";"START
     UNDERLINING";CHR$(27);"D";
     " UNDERLINE CANCELLED"
55   PRINT#1," "
60   PRINT#1,"SUPERSCRIPTS: OKIDATA";CHR$(27);
     "J";"R";CHR$(27);"K"
65   PRINT#1,"SUBSCRIPTS: H";CHR$(27);"L";
     "2";CHR$(27);"M";"O"
70   PRINT#1," "
75   PRINT#1,CHR$(27);"E";"DRAFT PRINT...
     ";CHR$(27);"G";"NEAR LETTER QUALITY"
80   PRINT#1," "
85   PRINT#1," "
90   PRINT#1,CHR$(18);"THIS IS REVERSE
     PRINTING"
95   PRINT#1,CHR$(146);"BACK TO STANDARD
     PRINTING"
100  PRINT#1," "
105  PRINT#1,CHR$(16);"15";"TEXT INDENTED
     15 SPACES"
110  CLOSE1
```

NOTE: Although we typed PRINT#1," " wherever we wanted a line space in the printout (lines 40, 55, 70, 80, 85, 100), you could simply type PRINT#1.

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Character Sets: Uppercase/Graphic (Cursor Up) and Uppercase/Lowercase (Cursor Down)

The Commodore computer offers two character sets:

- one with all uppercase (capital) letters and special graphic characters; and
- one with upper- and lowercase letters, plus a few graphic characters.

Normally, the Commodore uses the uppercase/graphic character set. You can select the other character set in three ways:

What You Do

Method 1—At the same time press:

<COMMODORE> <SHIFT>

What Appears/What Happens

This changes the character set on the screen only.

NOTE: <COMMODORE> represents the Commodore logo key.

HINT: If you select the same character set on screen as for the printer, you won't be surprised by the printout. Otherwise, you won't get what you see on the screen.

51

Method 2—After the PRINT# statement, type:

CHR$(17)

OKIMATE prints with upper- and lowercase letters.

CHR$(145)

OKIMATE prints with uppercase letters and graphic characters.

HINT: If you want to print several lines in upper- and lowercase, you must enter CHR$(17) on each line of the program or use the third method.

Method 3—In your OPEN statement, type:

OPEN 3,4,7

"7" tells OKIMATE to print data with upper- and lowercase letters.

HINT: Use this method if you want to print several lines in this mode.

secondary address

OPEN 3,4,0

"0" tells OKIMATE to print data with uppercase letters and graphic characters. OKIMATE prints in this mode automatically when you turn it on.

```
┌─────────── Character Size ───────────┐
│                                        │
│  Pica (10 CPI)          CHR$(15)       │
│  Elite (12 CPI)         CHR$(28)       │
│  Fine (17 CPI)          CHR$(29)       │
│                                        │
└────────────────────────────────────────┘
```

OKIMATE normally prints 10 characters per inch (CPI), like a pica typewriter. With the above commands, you can change the character size to elite (12 CPI), or fine print (17 CPI), and back to pica (10 CPI).

```
┌────────── Double-Width Characters ──────────┐
│                                              │
│  5 CPI              CHR$(15);CHR$(14)        │
│  6 CPI              CHR$(28);CHR$(14)        │
│  8.5 CPI            CHR$(29);CHR$(14)        │
│  Stop double        CHR$(129)                │
│  width                                       │
│  Stop double        CHR$(15)                 │
│  width, return                               │
│  to 10 CPI                                   │
│                                              │
└──────────────────────────────────────────────┘
```

If you want to make headlines with your OKI-MATE, enter the above command for doubling the width, CHR$(14). OKIMATE will double the width of the current character size, printing only half as many characters to the inch (from 5 to 8.5 characters per inch). OKIMATE will print these expanded characters until you stop them with either CHR$(129) or CHR$(15).

```
┌─────────── Print Quality ───────────┐
│                                       │
│  Draft              CHR$(27);"E" or   │
│                     CHR$(27);"e"      │
│  Near Letter Quality CHR$(27);"G" or  │
│  (NLQ)              CHR$(27);"g"       │
│                                       │
└─────────────────────────────────────────┘
```

IMPORTANT: When two alternative codes appear as above, use the first in Cursor Up (Uppercase/graphics), and the second in Cursor Down (Uppercase/lowercase) mode.

When you want a quick copy of your work for editing, use draft print at 80 characters per second (CPS). When you want to make a final, clean copy of a letter or other document, use Near Letter Quality print. It's not as fast as draft print, but the results look more professional.

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When you turn the printer on, it will print in Near Letter Quality. OKIMATE will print in NLQ with pica or elite (standard and expanded characters), but it won't print fine characters, superscripts, or subscripts in NLQ. If you insert the NLQ command while printing in one of these styles, OKIMATE won't start printing in NLQ until you insert the command for pica or elite characters.

```
┌─────────────── Italics ───────────────┐
│                                        │
│  Start italics          CHR$(27);"%G" or │
│                         CHR$(27);"%g"  │
│  Stop italics           CHR$(27);"%H" or │
│                         CHR$(27);"%h"  │
│                                        │
└────────────────────────────────────────┘
```

Use italics to emphasize a certain phrase or word. Pica or elite italics characters can be printed in Near Letter Quality, but fine (17 CPI) italics characters are printed in draft mode only. You cannot print superscripts or subscripts in italics.

```
┌────────── Super- and Subscripts ──────────┐
│                                            │
│  Start superscript       CHR$(27);"J" or   │
│                          CHR$(27);"j"      │
│  Stop superscript        CHR$(27);"K" or   │
│                          CHR$(27);"k"      │
│  Start subscript         CHR$(27);"L" or   │
│                          CHR$(27);"l"      │
│  Stop subscript          CHR$(27);"M" or   │
│                          CHR$(27);"m"      │
│                                            │
└────────────────────────────────────────────┘
```

For chemical formulas, you can print half-high, half-wide characters slightly below the printline (subscripts). For footnote references or exponents, you can print half-high, half-wide characters slightly above the printline (superscripts). Fine (17 CPI) characters are half the height, but the full width of standard 17 CPI characters.

For compatibility with some word processing packages, the commands for starting subscript and superscript may also be used to cancel the opposite feature.

Underlining

Start underlining	CHR$(27);"C" or
	CHR$(27);"c"
Stop underlining	CHR$(27);"D" or
	CHR$(27);"d"

To indicate a book title in a bibliography or emphasize a particular phrase, insert the above command. Any subsequent characters, including spaces and punctuation, will be underlined until you send the CHR$(27);CHR$(68) code. You cannot underline in graphics mode or in reverse print.

Reverse Print

Start reverse	CHR$(18) print
Stop reverse	CHR$(146) print

With this feature, white characters seem to be printed against a black background. (Actually, OKIMATE prints the background.) You can use this feature only when pica (10 CPI) or expanded pica (5 CPI) is selected. Reverse print stops automatically at the end of a line. If you want more than one line in reverse print, keep adding CHR$(18) at the beginning of each new line.

The RVS ON and RVS OFF (reverse ON/OFF) buttons on your keyboard affect what you see on the screen, but not what is printed.

Formatting Commands

Top of Page and Page Length

When you turn on OKIMATE, the top-of-page position is set automatically at the point where the printhead touches the paper. If you're using computer paper, you might want to set the top of page position at the perforation between pages. OKIMATE will start printing one-half inch below the top-of-page position.

At the factory, OKIMATE's page length is set to 11 inches. If you want to change it to 12 inches, see page A-4.

55

Form Feed

Prints data in print buffer, returns carriage, then feeds paper to top of next page.	CHR$(12)

Turning OKIMATE on automatically sets the top-of-page at the position where the printhead meets the paper. When OKIMATE receives the above command, it will feed the paper to the next top-of-page position. After printing a document, you can simply push the SELECT button for more than two seconds to feed the paper to the next top-of-page position.

Carriage Return

Prints data, then feeds paper one line (if SW6 is ON)	CHR$(13)
Prints data without feeding paper	CHR$(141)

When the printer receives a Carriage Return (CR) with Line Feed (LF) command—CHR$(13), it prints a line of data, and then feeds the paper one line. CHR$(13) also stops reverse print and the function cut (FCUT) mode. When the printer receives the CHR$(141) command, it will overprint the lines of data on the same line. This command is essential for printing color graphics.

Line Spacing

Line feed	CHR$(10)
Line spacing in multiples of 1/144 inch, where $0 \leq n \leq 255$.	CHR$(27);CHR$(10); CHR$(n)

When OKIMATE receives a Line Feed (LF) command, it feeds the paper one line at the current line spacing. Although OKIMATE has a standard line spacing of 6 lines per inch, you can specify another line spacing for special effects, such as 14/144 inches for Commodore graphics.

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Sets starting position by character column, where: 00 ≤ cc ≤ 99.	CHR$(16);"cc"
Sets starting position by dot column.	CHR$(27);CHR$(16);CHR$(n1);CHR$(n2)

With this feature you can specify the exact character column position (cc) where text printing starts on a line. You can enter any two-digit decimal number (cc) from 00 to 99 to define this po-

sition. For example, this command starts printing at character column 40:

```
CHR$(16);"40";"DATA YOU WANT TO PRINT"
```

The actual distance from the left margin will vary with the character size.

When you select fine (17 CPI) print, you can specify a starting position greater than 100, but less than 135, with two decimal numbers. Using the table below, a starting position at column 135 would be specified with decimal numbers 61 and 53, and the statement would look like this:

```
CHR$(16);CHR$(61);CHR$(53)
```

Decimal Values for Columns 100 to 135 (Fine Print)			
100 = 58 48	110 = 59 48	120 = 60 48	130 = 61 48
101 = 58 49	111 = 59 49	121 = 60 49	131 = 61 49
102 = 58 50	112 = 59 50	122 = 60 50	132 = 61 50
103 = 58 51	113 = 59 51	123 = 60 51	133 = 61 51
104 = 58 52	114 = 59 52	124 = 60 52	134 = 61 52
105 = 58 53	115 = 59 53	125 = 60 53	135 = 61 53
106 = 58 54	116 = 59 54	126 = 60 54	
107 = 58 55	117 = 59 55	127 = 60 55	
108 = 58 56	118 = 59 56	128 = 60 56	
109 = 58 57	119 = 59 57	129 = 60 57	

You can also set a starting position at an exact dot column. First select the dot column position with this formula:

dot column position = distance from left margin x dots/inch

For example:

dot column position = 4 inches x 60 dots/inch = 240

To calculate the values of n1 and n2, divide the dot column position by 256:

$$256 \overline{)240} \quad \begin{array}{l} 0 = n1 \\ \hline -0 \\ \hline 240 = n2 \end{array}$$

Then enter the values of n1 and n2 in the statement:

```
CHR$(27);CHR$(16);CHR$(0); CHR$(240);
"TEXT..."
```

NOTE: These commands are ignored if the printhead is to the right of the starting position.

Other Commands

```
┌─────────── Skip-Over Perforation ───────────┐
│ Turns it ON          CHR$(27);CHR$(65)       │
│ Turns it OFF         CHR$(27);CHR$(66)       │
└──────────────────────────────────────────────┘
```

When you turn on OKIMATE, this feature is turned off (except for the self test pattern). In case you want the printer to skip over the perforation between pages at the bottom of each page, just include this command in your program. Since most word processors already handle page formatting, it's best to leave this feature off if you're using a word processing package.

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Resetting the Printer

At times you may want to reset the printer to its standard settings—those set by the function switches on the control module.

What You Do	What Appears/What Happens
1. Send this OPEN statement to the printer:	

10 OPEN 3,4,10

└ secondary address   10 resets the printer to its standard settings.

└ device number   4 is the device number for OKIMATE.

└ logical file number   This number must be the same one used in the entire program.
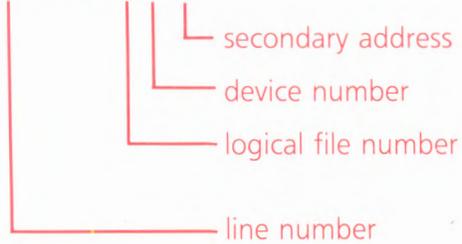
└ line number

2. Enter this second line:

    20 PRINT#3, "RESETS THE PRINTER"   Explains what first statement does. This PRINT# statement will not be printed.

3. Enter this third line:

    30 CLOSE 3   This statement concludes the program.

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When you want to check a program you've written, use this feature to print all the data, including the printer commands. Enclose the data you want printed in quotation marks. OKIMATE will print all non-printing codes in reverse print, ASCII decimal values from 00 to 31 as decimal values 64 to 95, and ASCII decimal values from 128 to 159 as decimal values 192 to 223.

Advanced Features

Graphics

Graphics lets you "draw" almost anything with your printer. In the same way that newspapers reproduce photographs, OKIMATE produces a graphic image with a pattern of tiny dots. Your program or graphics package tells OKIMATE where to print each dot. Since even a simple drawing can consist of many individual dots, the easiest way for you to create illustrations is with a graphics software package that manages all those dots for you. A software package usually lets you create an image on your computer's screen, save it on a disk, and print it onto a page.

This section explains how to program graphic images on your own, without the aid of software packages. With the methods described here, you can write programs for drawing charts, illustrations, decorative borders, and other graphic designs.

In normal text mode, the computer sends OKIMATE ASCII codes that are assigned to particular characters. For example, CHR$(65) in Uppercase/graphics mode represents the capital letter A.

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In graphics mode, ASCII codes no longer stand for characters. Instead each code now represents a pattern of dots in a single column, seven dots high. For example, the CHR$(65) code prints this dot pattern:

Combinations of these dot patterns form graphic images.

OKIMATE offers two kinds of graphics, 7-dot and 24-dot. In 7-dot graphics, which is compatible with Commodore printers, OKIMATE uses only a portion of its printing elements to create graphic patterns. In 24-dot graphics, however, OKIMATE uses all its printing elements to create graphic images.

When you print either 7- or 24-dot graphics, you can control the spacing between the dots in your graphic designs with the same commands used to change character size, like pica or elite. The command for pica (10 CPI) printing gives you graphics with horizontal spacing of 120 dots per inch. The command for elite (12 CPI) printing gives you graphics with horizontal spacing of 160 dots per inch. Both have 144 dots per inch vertically.

7-Dot Graphics

Start graphics	CHR$(8)
Stop graphics	CHR$(15)
Repeat graphics n times, where n is any number between 1 and 256.	CHR$(26);CHR$(n)

When you send 7-dot data, each dot is "magnified" vertically and horizontally by actually being printed four times, creating a larger, denser dot: the code for one dot automatically creates the three additional dots.

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Before you can program graphics, you must first draw your picture on a grid. Since OKIMATE prints graphics in seven-dot columns, divide your picture into seven-row strips:

Column

	1	2	3	4	5	6	7
64	○						○
32		○				○	
16			○		○		
8				○			
4			○		○		
2		○				○	
1	○						○

Position Value (left label)

Column total: 65 34 20 8 20 34 65

\+ 128

Total: 193 162 148 136 148 162 193
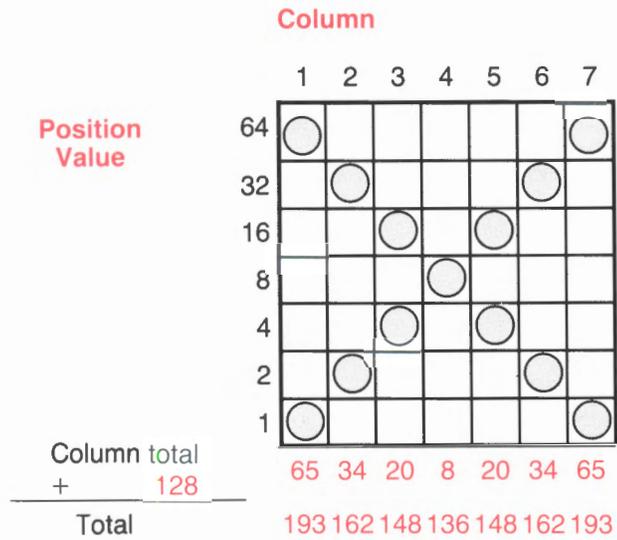
NOTE: To be compatible with Commodore graphics, the graphic data must be sent in 8-bit form. Therefore, the 8th bit, 128, must be added to the total for each column. This 8th bit will not be printed.

Each dot you draw will actually be printed four times, so the final printout of the figure above will have a pattern of dots 14 dots high by 14 dots wide. The final graphic image will appear denser and thicker than the image you've designed.

We've assigned decimal values to each of the grid's seven rows. Starting with the left column, add the values for each position containing a dot, then add 128 to the column total. Repeat this for all the columns in the grid. You will enter these column totals in your graphics program.

Start your program by selecting pica or elite spacing, then enter the print graphics code CHR$(8), then your graphics data. Remember to add CHR$(15) when you're finished printing graphics. You can enter graphics data with CHR$ statements, but you might find it easier to use DATA statements. For example:

```
10   DATA 193,162,148,136,148,162,193
20   FOR I=1 TO 7
30   READ G
40   G$=G$ + CHR$(G)
50   NEXT I
60   OPEN 3,4
```

```
70  PRINT#3,CHR$(8);G$;CHR$(15)
80  CLOSE 3
```

Here is the printout: ✕

By the way, line spacing in the graphics mode is 14/144 inch.

When you write your DATA statement remember that OKIMATE prints a maximum of 480 graphic columns in one line. If you send more, it will be printed at the left margin of the next line.

With the repeat graphics command —CHR$(26); CHR$(n)—you can repeat a dot pattern across the page to create decorative borders or bar charts. The n in the command represents the number of times you want the column repeated (from one to 126). Follow the repeat command with the decimal value of the dot pattern you want repeated.

24-Dot Graphics

Start 24-dot graphics	CHR$(3)
Normal resolution	CHR$(27);"P" or CHR$(27);"Q"
High resolution	CHR$(27);"R"
Stop 24-dot graphics	CHR$(3);CHR$(2)

In 24-dot graphics mode all the printhead's heating elements are used to create graphic images. When you send 24-dot graphics data to your printer, you can specify low-resolution or high-resolution graphics. In low resolution, each dot is doubled horizontally, creating one additional dot for each dot sent. In high resolution, the dot patterns are placed more precisely so you will get smoother curves and more precise, straighter lines.

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Let's try designing a square on a 24 by 24 grid like this:
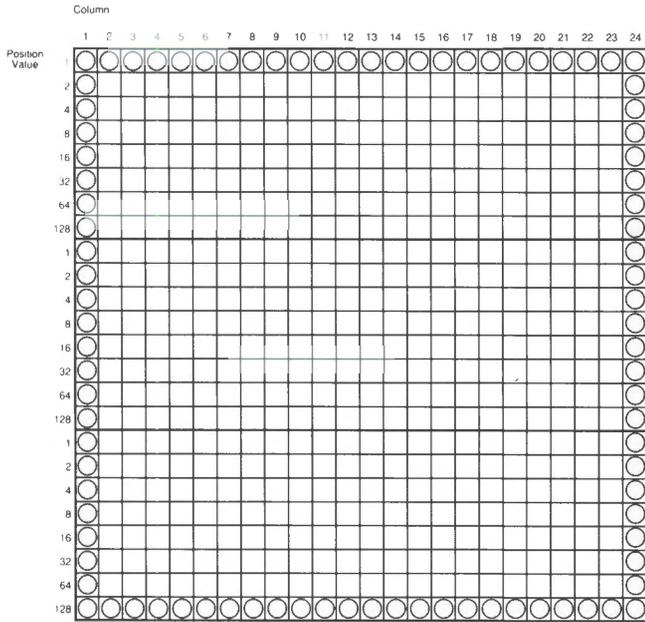
When you program 24-dot graphics, each dot column is defined with three values. Divide the grid into thirds, then add the totals:

Enter these totals in your graphics program.
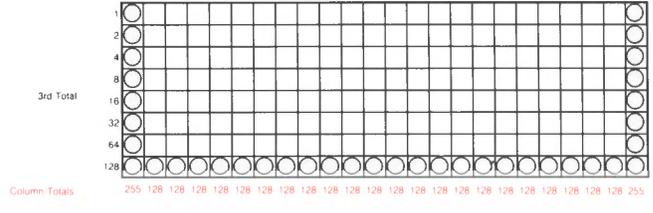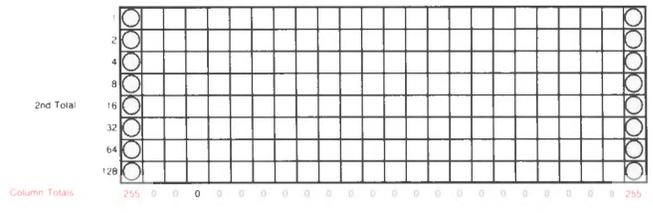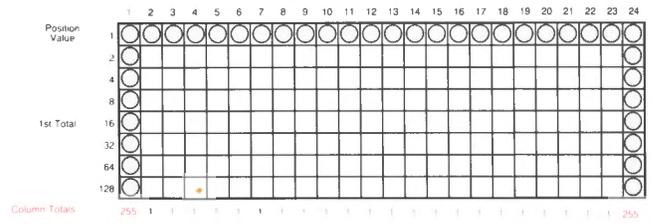
Writing the Program

Start your graphics program with one of these commands:

For low resolution, enter:

```
CHR$(27);"P" or CHR$(27);"Q"
```

For high resolution, enter:

```
CHR$(27);"R"
```

Next select either pica (horizontal spacing of 120 dots per inch) or elite (horizontal spacing of 160 dots per inch). Use the same commands you use when printing text:

For pica, enter: CHR$(15)

For elite, enter: CHR$(28)

Next enter CHR$(3) followed by the list of your totals. Starting at the left, list the column totals from top to bottom. On the next program line, exit the graphics mode with the CHR$(3);CHR$(2) command. Next send CHR$(13) to advance the paper another line, and return the printhead to the left margin.

As an example, here's the program for the square in low resolution:

```
10   OPEN 3,4
20   PRINT#3,CHR$(27);"P";
25   PRINT#3,CHR$(15);
30   DATA 255,255,255,1,0,128,1,0,
     128,1,0,128,1,0,128,1,0,128
40   DATA 1,0,128,1,0,128,1,0,128,
     1,0,128,1,0,128,1,0,128
50   DATA 1,0,128,1,0,128,1,0,128,
     1,0,128,1,0,128,1,0,128
60   DATA 1,0,128,1,0,128,1,0,128,
     1,0,128,1,0,128,255,255,255
70   FOR I=1 TO 72
80   READ G
90   G$=G$ + CHR$(G)
100  NEXT I
110  PRINT#3,CHR$(3);G$;CHR$(3);CHR$(2)
120  PRINT#3,CHR$(13)
130  CLOSE 3
```

You can specify high-resolution graphics by substituting CHR$(27);"R" in line 20.

Compare the printouts:

Low resolution: ▢

High resolution: ▢

65

Color Printing

Start color print	CHR$(27);CHR$(25)
End of line; advance to next color	CHR$(13)

The easiest way to get a color printout is with the color print program on the OKIMATE software disk. You can also write your own programs to print characters or graphics in color, but it's rather complicated. We'll explain how color printing works, and how to use it in BASIC programs.

The color ribbon contains three color strips (yellow, magenta, and cyan), plus a black and clear marker strip. OKIMATE aligns the ribbon with the black section of the marker strip, and prints with the color strips. Once the ribbon is aligned, the printhead passes over each line of print three times, first with the yellow strip, next with the magenta strip, and then with the cyan strip. After the third pass over the line of print, OKIMATE expects the alignment command to reset the ribbon to the alignment marker before the first color

strip, yellow. Like an artist mixing paints, the printer creates a wide range of colors by mixing the three primary colors on the paper.

When you write a color printing program, you must include the alignment command at the beginning of the first print statement for each line of print. The alignment command— CHR$(27);CHR$(25)—tells OKIMATE to advance the ribbon to the alignment marker at the start of the first color (yellow). OKIMATE will print any text in the first print statement in yellow. Entering CHR$(13) at the end of this statement prints the line, advances the ribbon to the next color (magenta), and returns the printhead to the left. OKIMATE will print the second print statement in magenta. The CHR$(13) at the end of the second statement prints the line, advances the ribbon to the next color (cyan), and returns the printhead to the left. All three colors can be overprinted.

After the third print statement for a print line (one for yellow, second for magenta, and third for cyan), you must send a line feed (LF) command—CHR$(10)—to feed the paper one line. Align the ribbon for the next color print line with the alignment command:

66

```
CHR$(27);CHR$(25)
```

The following programs illustrate two different ways of entering the CR command. In Program #1, no semicolons at the end of the print statements (lines 30, 40, and 50) tell OKIMATE to print the text, advance the ribbon to the next color, and return the printhead to the left. In Program #2, the CHR$(13) gives OKIMATE the same instruction.

Program #1:

```
10   OPEN 1,4
20   PRINT#1,CHR$(27);CHR$(25);
30   PRINT#1,"YELLOW, 9 AND 6 MAKE BLACK"
40   PRINT#1," 8 MAGENTA AND 6 MAKE
     BLACK"
50   PRINT#1," 16 AND CYAN MAKE BLACK"
60   PRINT#1,CHR$(10);
70   CLOSE 1
```

NOTE: The red numbers in these programs indicate how many spaces to insert. In the program above, for example, line 30 adds 9 spaces after *YELLOW,* and 6 spaces after *AND.* Don't put the numbers in your program; they're for reference only.

Program #2:

```
10   OPEN 1,4
20   PRINT#1,CHR$(27);CHR$(25);
30   PRINT#1,"YELLOW, 9 AND 6 MAKE
     BLACK";CHR$(13);
40   PRINT#1," 8 MAGENTA AND 6 MAKE
     BLACK";CHR$(13);
50   PRINT#1," 16 AND CYAN MAKE
     BLACK";CHR$(13);
60   PRINT#1,CHR$(10);
70   CLOSE 1
```

When you want to skip a color, just send another CHR$(13) without text to advance to the next color strip. See line 40 in the program below.

```
10   OPEN 1,4
20   PRINT#1,CHR$(27);CHR$(25);
30   PRINT#1,"YELLOW + 6 = GREEN"
40   PRINT#1,CHR$(13);
50   PRINT#1," 7 + CYAN = GREEN"
60   PRINT#1,CHR$(10);
70   CLOSE 1
```

Line 20 tells OKIMATE to align the color ribbon.

Line 30 tells OKIMATE to print the text in quotes with the yellow strip, advance to the magenta strip, and return the printhead to the left.

Line 40 tells OKIMATE to skip the magenta strip. The printhead will pass over the line without printing in magenta.

Line 50 tells OKIMATE to print the text in quotes with the cyan strip and return the printhead to the left.

Line 60 advances the paper one line.

Before you print your color printing program, make sure you've loaded the color ribbon cartridge. In all cases, the smoother the paper, the better the color reproduction will be.

APPENDIX A: OKIMATE's Function Switches

By setting OKIMATE's function switches, you can specify the page length and character set for your documents, have the printer not add a line feed after it prints a line of data, or change the printer's device number. The next few pages explain how to reset the switches exactly the way you want. These settings become OKIMATE's new standard features.

Removing the Control Module

Turn OFF and unplug the printer.

Unplug the data cable.

①
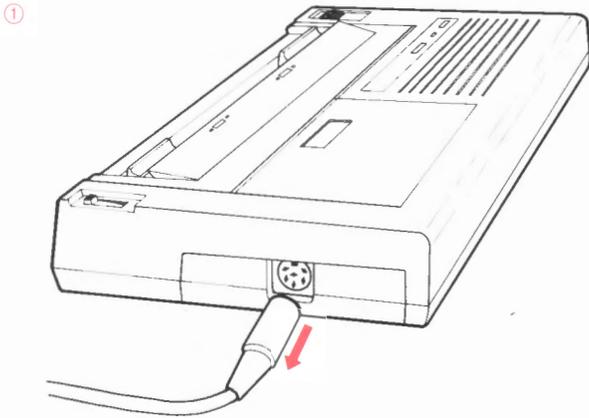
Remove the locking cover.

②
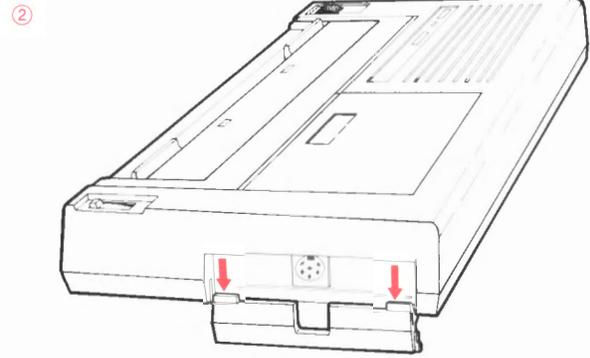
Now use it as a tool to remove the module:

A-2

③
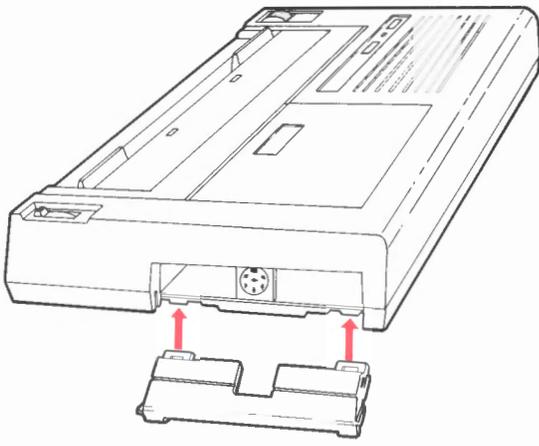
Engage its slots with the module's metal tabs.

④
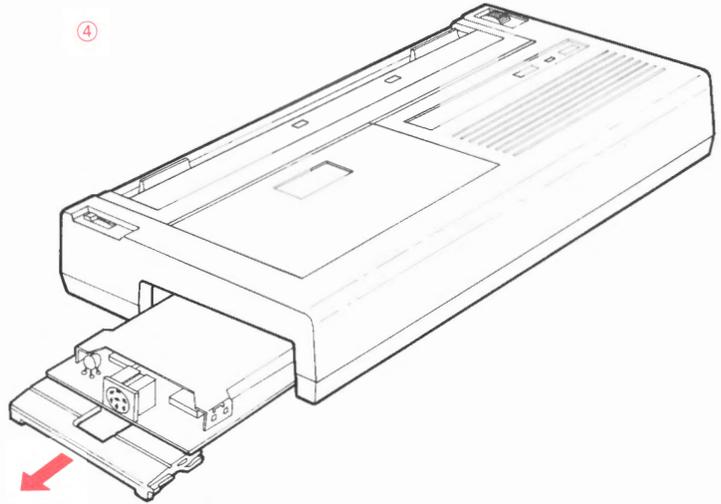
While holding the cover at its edges, gently pull out the module.

A-3

You'll find the switch bank to the right of the module plug.

⑤
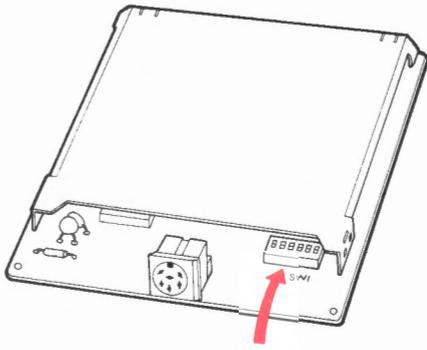
Use the tip of a ballpoint pen or other pointed object to set the switches.

*Commodore computers require a printer device number for programming and for software packages.

NOTES: Red indicates the initial switch settings.

If OKIMATE inserts an extra space between lines of text, set SW6 to ON. If OKIMATE overprints lines of text, set SW6 to OFF.

Plug 'n Print Function Switches

Selections	Switch Settings			
	SW1	SW2	SW3	SW4
Page Length/Character Set				
11-inch page				
ASCII (slashed zero)	OFF	ON	OFF	ON
ASCII (unslashed zero)	ON	ON	OFF	ON
British	OFF	ON	ON	ON
French Canadian	OFF	OFF	ON	ON
Spanish	ON	OFF	ON	ON
Swedish (11 2/3-inch)	ON	ON	ON	ON
12-inch page				
ASCII (slashed zero)	OFF	OFF	OFF	OFF
ASCII (unslashed zero)	ON	OFF	OFF	OFF
British	OFF	ON	OFF	OFF
German	ON	ON	OFF	OFF
French	OFF	OFF	ON	OFF
Swedish	ON	OFF	ON	OFF
Danish	OFF	ON	ON	OFF
Norwegian	ON	ON	ON	OFF
Dutch	OFF	OFF	OFF	ON
Italian	ON	OFF	OFF	ON
Printer Device Number*	SW5			
4	OFF			
5	ON			
Automatic Line Feed	SW6			
Yes	OFF			
No	ON			

With function switches 1 through 4, you can select a page length of 11 or 12 inches, and one of the international character sets. When you select an international character set, OKIMATE will print language-specific characters (for example, á, é, è, ö, ü, etc.) instead of some ASCII characters. The chart on page A-6 lists all the special characters available with the international character sets.

After setting these function switches, replace the control module and locking cover. Are the power switches for the computer and OKIMATE off? If so, connect the data cable, then turn on the components. Now you can print.

International Language Characters

Language / Decimal Code	35	38	48	64	79	91	92	93	94	95	96	123	124	125	126
Cursor Up: Commodore 0	#	&	0	@	O	[	£	]	↑	←	—	+	▓	|	π
Commodore 0	#	&	U	@	O	[	£	]	↑	←	—	+	▓	|	π
Cursor Down: Commodore 0	#	&	0	@	O	[	£	]	↑	←	—	+	▓	|	➤◄
Commodore 0	#	&	0	@	O	{	£	]	↑	←	—	+	▓	|	➤◄
British	£	&	0	@	O	[	\	]	↑	←	—	+	▓	|	π
German	#	&	0	§	O	Ä	Ö	Ü	↑	←	—	ä	ö	ü	β
French	£	&	0	à	O	°	ç	§	↑	←	—	é	ù	è	ê
Swedish	#	&	0	É	O	Ä	Ö	Å	Ü	←	é	ä	ö	å	ü
Danish	#	&	0	@	O	Æ	Φ	Å	Ü	←	—	æ	φ	å	ü
Norwegian	#	&	0	@	O	Æ	Φ	Å	↑	←	·	æ	φ	å	π
Dutch	£	&	0	@	O	[	IJ	]	↑	←	—	+	ij	|	π
Italian	£	&	0	§	O	°	ç	é	↑	←	ù	à	ò	è	ì
French Canadian	ü	ë	0	à	0	â	ç	ê	î	ï	ô	é	ù	è	û
Spanish	!	&	0	¡	O	Ñ	ñ	¿	ü	←	á	é	í	ó	ú

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
														!	"	#	$	%

38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
&	'	(	)	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
9	:	;	<	=	>	?	@	A	B	C	D	E	F	G	H	I	J	K

76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[	£	]	↑

95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
←	─	♠	│	─	─	─	─	│	│	╮	╰	╯	└	╲	╱	┌	┐	▬

114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
─	♥	│	╭	✕	○	♣	│	♦	+	▒	│	π	◣					

B-1

133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151

152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
									■	■	—	—	┃	▒	┃	～	◢	┃

171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189
├	■	└	┐	—	┌	┴	┬	┤	┃	■	■	─	━	━	┘	▬	▪	┙

190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208
▬	◣	—	♣	┃	—	—	—	—	┃	┃	↘	↖	↙	└	↘	↗	┌	┐

209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227
▬	—	♥	┃	↗	✕	▭	✛	┃	◆	✛	▓	┃	ㅠ	◤		■	▬	—

228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246
—	┃	▓	┃	～	◢	┃	├	▪	└	┐	—	┌	┴	┬	┤	┃	■	■

247	248	249	250	251	252	253	254	255										
—	▬	▬	┘	▪	▪	┘	▬	ㅠ										

B-2

Cursor Down Mode

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
														!	"	#	$	%

38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
&	'	(	)	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
9	:	;	<	=	>	?	@	a	b	c	d	e	f	g	h	i	j	k

76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	[	£	]	↑

95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113
←	-	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q

114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
R	S	T	U	V	W	X	Y	Z	+	▩			⋈	⋰					

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133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151

152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
									■	▬	—	—	❘	▨	❘	≈≈	///	❘

171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189
⊢	■	└	¬	—	⌐	⊥	⊤	⊣	❘	▮	■	—	—	▬	✓	▬	▬	⌐

190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208
▬	⌐	—	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227
Q	R	S	T	U	V	W	X	Y	Z	+	▨	❘	✕	∖∖∖		■	▬	—

228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246
—	❘	▨	❘	≈≈	///	❘	⊢	▬	└	¬	—	⌐	⊥	⊤	⊣	❘	▮	■

247	248	249	250	251	252	253	254	255
—	—	▬	✓	▬	▬	⌐	▬	✕

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APPENDIX C: OKIMATE Command Summary

This chart contains all the printer commands described in Section 3. For most applications, you'll need only the decimal form. If you want to change print styles in your word processing package, refer to its printing instructions and "Printing with Software" in Section 1.

NOTE: The lowercase "n" in some of the commands represents a variable number.

FEATURE	DECIMAL	HEXA-DECIMAL
Character sets:		
Uppercase/Graphics (Cursor Up)	145	91
Uppercase/Lowercase (Cursor Down)	17	11
Character size:		
Pica (10 CPI)	15	0F
Elite (12 CPI)	28	1C
Fine (17 CPI)	29	1D
Wide—doubles width of current character size	14	0E
Clear wide print	129	83
Color printing:		
Align ribbon	27 25	1B 19
End of line; advance to next color	13	0D
Formatting:		
Carriage Return (CR)	13	0D
CR without Line Feed	141	8D
Line feed (one line)	10	0A
Advance to next page	12	0C
Line spacing in multiples of $n/144$ inch, where $0 \leq n \leq 255$	27 10 n	1B 0A n
Function code cut:		
Prints all data between two quotation marks.	34	22
Graphics, Commodore:		
Start	8	08
Stop	15	0F
Repeat graphics	26 n	1A n
Graphics, OKIMATE:		
Start	3	03

FEATURE	DECIMAL	HEXA-DECIMAL
Stop	03 02	03 02
High resolution	27 82	1B 52
Low resolution	27 80	1B 50
120 and 160 x 144	or	or
	27 81	1B 51
Italics:		
Start	27 37 71	1B 25 47
Stop	27 37 72	1B 25 48
Print quality:		
Draft	27 69	1B 45
Near Letter Quality	27 71	1B 47
Reverse print:		
Reverse image (RVS ON)	18	12
Return to normal (RVS OFF)	146	92
Skip-Over Perforation:		
Turns it OFF	27 66	1B 42
Turns it ON	27 65	1B 41
Starting position:		
Dot column	27 16 n1 n2	1B 10 n1 n2
Character column	16 n1 n2	10 n1 n2
Super- and Subscripts:		
Start subscript	27 76	1B 4C
Stop subscript	27 77	1B 4D
Start superscript	27 74	1B 4A
Stop superscript	27 75	1B 4B
Underlining:		
Start	27 67	1B 43
Stop	27 68	1B 44

C-2

APPENDIX D: Specifications

Print Method

Method:	Ribbon transfer dot matrix Thermal (heat sensing)
Format:	Unidirectional printing

Characters

Character matrix:

Near Letter Quality	14H × 18V dots
Utility	7H × 9V dots
Super/Subscript	7H × 9V dots
Lower case	True, below-the-line descenders

Character pitches:
CPI = characters/inch
CPL = characters/line

Wide print:	5 CPI/40 CPL
	6 CPI/48 CPL
	8.5 CPI/66 CPL
Pica print:	10 CPI/80 CPL
Elite print:	12 CPI/96 CPL
Fine print:	17 CPI/132 CPL

Italics:	Yes
Reverse printing:	Yes

Line spacing:
LPI = lines/inch

6 lines per inch
8 lines per inch
Multiples of 1/144 inch

Graphics

Density: DPI = dots per inch	72V × 60H DPI
	72V × 72H DPI
	144V × 120H DPI
	144V × 144H DPI

Printline:	24V × 1152H dots
Line spacing:	Multiples of 1/144 inch

Speed

Text:
CPS = characters per second

	40 CPS in NLQ mode
	80 CPS in Utility mode

Graphics (120 × 144 DPI)	15 lines per minute (24V × 960H dot printline)

Paper

Type:	Plain paper (smooth finish), thermal transfer, thermal paper or acetate transparencies
Paper Feed:	Pin feed for computer paper Friction feed for single sheets or roll paper.
Feed location:	Rear feed
Width:	5 to 10 inches

Special Features:	Paper-out sensor
	Top-of-page setting
	Skip-over perforation
	Optional roll paper stand
	Front panel form feed function

Printhead

Print elements:	24
Dot type:	Square dots for full coverage
Print darkness:	5-position slide switch adjustment
Replacement:	Snap-in, no tools required

Ribbon

Type:	Black or color, single-strike
Cartridge:	Easy load, "clean hands" type
Ribbon life:	Black: 120K characters (or about 75 average pages)
	Color: About 35K characters (or 15 screen prints)
	NOTE: Actual yield may vary due to application, print style, graphics usage, and other variables.
Special features:	Ribbon near-end detector
	Ribbon-saving (black ribbon)— ribbon does not advance when multiple "spaces" are printed.

Controls

Power:	ON/OFF switch
Select:	PAUSE/RESTART push button
Ready lamp:	Indicates ready/not ready to print
Print darkness:	5-position slide switch
Paper handling:	Typewriter-like paper lever, paper advance knob, and paper margin guides
Form feed:	Hold select button two seconds

Color

Ribbon:	3 colors
Text:	7 colors
Color graphics:	More than 100 shades possible

Physical

Size:	13"L X 7.5"W X 2.25"H
Weight:	6.2 lbs.
Power:	115 volts AC, 40 watts

Specifications subject to change without notice.

Warranty and Repair Information

LIMITED WARRANTY

OKIDATA, Division of Oki America, Inc. ("OKIDATA") warrants this OKIMATE Printer to be free from defects in material and workmanship and will remedy any such defect according to the terms of the Limited Warranty. This Limited Warranty does not extend to printer ribbon, a consumable item.

OKIDATA will repair (or at its option, replace) at no charge any defective component(s) of the OKIMATE Printer for ninety (90) days from the date of purchase. This Limited Warranty extends to the original purchaser only.

To make request or claim for service under this Limited Warranty, the original purchaser must return the OKIDATA product, shipping prepaid, in the original shipping container or equivalent, to OKIDATA or an OKIDATA authorized service center and assume the risk of loss or damage in transit to OKIDATA. Proof of purchase for the product showing the date of purchase, where purchased, serial number, and item purchased must accompany any request for work to be performed under this Limited Warranty.

This Limited Warranty shall not apply if the product has been damaged due to abuse, misuse, misapplication, accident, or as a result of service or modification by any other than an authorized OKIDATA service center.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE ON THE FACE HEREOF AND DESCRIBED ABOVE. NO WARRANTIES WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL EXTEND BEYOND THE WARRANTY PERIOD DESCRIBED ABOVE OF NINETY DAYS. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

OKIDATA SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY SPECIAL INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR LOSS ARISING FROM THE USE OF THIS PRODUCT. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This Limited Warranty applies to this product when sold in the continental United States. Additional information on obtaining service under this Limited Warranty is available by contacting OKIDATA directly at 1-800-OKIDATA or one of the service centers listed below.

OKIDATA SERVICE CENTERS

WEST
843 Auburn Court
Fremont, CA 94536
(415) 657-0600

MIDWEST
1155A W. Dundee Road
Arlington Heights, IL 60004
(312) 253-8055

EAST
111 Gaither Drive
Mt. Laurel, NJ 08054
(609) 235-2600

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

See page 43 for service information.

This Limited Warranty applies to all OKIDATA OKIMATE printers. However, the procedure for obtaining service may vary outside the continental United States. Contact your OKIDATA dealer for warranty service information.

Federal Communications Commission Radio Frequency Interference Statement

WARNING: This equipment complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules. These specifications are designed to minimize radio frequency interference in a residential installation; however, there is no guarantee that radio or television interference will not occur in any particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on when the radio or television is on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the radio or television receiving antenna.

- Relocate the printer with respect to the receiver.

- Move the printer away from the receiver.

- Plug the printer into a different outlet so that the printer and the receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402 by ordering Stock No. 004-00000345-4.

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